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Underprivileged Citizens' Use of Technology for Everyday Health Management

a conceptualization of underprivileged citizens' engagement in health-related occupation

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UNDERPRIVILEGED CITIZENS' USE OF TECHNOLOGY FOR EVERYDAY HEALTH MANAGEMENT

**A CONCEPTUALIZATION OF UNDERPRIVILEGED CITIZENS'
ENGAGEMENT IN HEALTH-RELATED OCCUPATION**

**BY
JACOB ØSTERGAARD MADSEN**

DISSERTATION SUBMITTED 2017



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CV

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*I would like to dedicate this thesis to my daughter Silja.
You have given me strength I did not know of.*

ENGLISH SUMMARY

In this doctoral thesis, I address the problem of inequality in health by focusing on how underprivileged citizens experience and manage health-related problems in their everyday lives. Particularly, I focus on the citizen's use of technology for engaging in health-related occupation. The field of research for the thesis is occupational science (OS), while Deweyan pragmatism is called upon as a theoretical frame.

The overall aim of this thesis is to develop conceptual knowledge on how to support underprivileged citizens' engagement in health-related occupation, with attention to these citizens' everyday health management using technology. To achieve this aim, three consecutive studies were conducted.

Study I: A state-of-the-art literature study to contribute knowledge of how relevant areas of concern have been described and conceptualized within contemporary occupational science and therapy literature from 2004 to 2014. The study revealed an assumed relation in the literature between occupation and inequality in health. A transactional perspective on occupation was identified and introduced as a possible theoretical perspective on the relation between occupation and inequality in health. From a transactional perspective on occupation, inequality in health may be regarded as a situation that can be experienced by individuals or groups of people due to unequal and limited possibilities for choosing and participating in occupation.

Study II: An empirical study to contribute empirical knowledge about underprivileged citizens' use of technology for engaging in health-related occupation. John Dewey's theory of transaction was applied as a conceptual framework for analyzing the citizens' use of technology for managing everyday health. The study showed that citizens' use of technology for engaging in health-related occupation is influenced by the technology's support of the merging of the complex interplay of personal and contextual conditions and its supporting of the citizens in their "inquiry to action" strategies concerning everyday health management.

Study III: A theoretical study of John Dewey's theory of inquiry to contribute theoretical understanding of engagement in occupation from a situated perspective. In the study, it was found that inherent in occupation is an inquiring process that provides occupation with a transformative capacity. By engaging in occupation, humans situate themselves into ever changeable situations through the explorative and practical acting of inquiry. However, this enacted situated inquiry depends on a context rich enough to provide cues for knowledge strategies on how to engage in the next experimental and transformational doing in everyday life.

Overall, this thesis contributes by conceptualizing underprivileged citizens' engagement in health-related occupation as a situationally dependent transactional experience, characterized by the practical acting of inquiry on health-related matters. Derived from this conceptualization, underprivileged citizens' problems in engaging in health-related occupations can be viewed as difficulties with acting inquiringly on health-related indeterminacy in their everyday lives. Based on this perception of engagement in health-related occupation, underprivileged citizens' use of technology for everyday health management can be described as dependent on whether or not the technology takes account of and supports the merging of the necessary and complex interplay of personal and contextual conditions as well as supporting the citizens in their "inquiry to action" strategies concerning in-depth practical concerns about everyday health management.

DANSK RESUME

I denne afhandling adresserer jeg problemet med ulighed i sundhed, ved at rette fokus på hvordan underprivilegerede borgere oplever og håndterer sundhedsrelaterede problemer i deres hverdag med særligt fokus på borgernes anvendelse af teknologi til at engagere sig i sundhedsrelateret aktivitet. Forskningsfeltet for denne afhandling er aktivitetsvidenskab (occupational science), mens Deweyansk pragmatisme er anvendt som teoretisk ramme.

Det overordnede mål med afhandlingen er at udvikle konceptuel viden, om hvordan underprivilegerede borgere kan støttes i sundhedsrelateret aktivitet, med fokus på disse borgers anvendelse af teknologi til håndtering af sundhed i hverdagen. For at nå dette mål, blev der gennemført tre studier.

Studie I: Et litteraturstudie, udført for at bidrage med viden om hvordan relevante emner er blevet beskrevet og konceptualiseret indenfor aktivitetsvidenskabelig og ergoterapifaglig litteratur fra 2004 til 2014. Studiet viste at der i litteraturen er en antagelse om en sammenhæng mellem aktivitet og ulighed i sundhed. Et transaktionalistisk perspektiv på aktivitet blev identificeret og introduceret som et muligt teoretisk perspektiv på sammenhængen mellem aktivitet og ulighed i sundhed. Ud fra et transaktionalistisk perspektiv på aktivitet kan ulighed i sundhed beskrives som en situation der kan opleves af enkeltpersoner eller grupper af mennesker, på grund af ulige og begrænsede muligheder for at vælge og deltage i aktivitet.

Studie II: Et empirisk studie, udført for at bidrage med empirisk viden om underprivilegerede borgers anvendelse af teknologi til at engagere sig i sundhedsrelateret aktivitet. John Deweys teori om transaktion blev anvendt som konceptuel ramme til analyse af borgernes anvendelse af teknologi til håndtering af sundhed i hverdagen. Studiet viste at borgernes anvendelse af teknologi til engagement i sundhedsrelateret aktivitet er influeret af hvorvidt teknologien støtter et komplekst sammenspil mellem personlige og kontekstuelle forhold, samt hvorvidt teknologien støtter borgernes evne til at lave strategier for hvordan de kommer fra undersøgelse til handling i deres håndtering af sundhed i hverdagen.

Studie III: Et teoretisk studie af John Deweys begreb 'inquiry', udført for at bidrage med en teoretisk forståelse af engagement i aktivitet i et situeret perspektiv. Studiet viste at udførelse af aktivitet indeholder en undersøgelsesproces der forsyner aktivitet med en transformativ kapacitet. Ved at engagere sig i aktivitet situerer mennesker sig selv ind i altid foranderlige situationer, gennem eksplorative og praktisk udførte undersøgelsesprocesser. Denne praktiske og eksperimenterende handling afhænger dog af, hvorvidt konteksten, hvori handlingen udføres, kan give tegn og signaler til viden-strategier, for hvordan man kan engagere sig i den næste eksperimentelle og transformative handling i hverdagen.

Samlet set bidrager denne afhandling med at konceptualisere underprivilegerede borgeres engagement i sundhedsrelateret aktivitet som en situations afhængig transaktionalistisk oplevelse, kendetegnet ved praktisk udførte undersøgelsesprocesser målrettet sundheds relaterede spørgsmål. På baggrund af denne konceptualisering, kan underprivilegerede borgernes problemer med at engagere sig i sundheds aktiviteter, beskrives som vanskeligheder med at handle undersøgende på en sundhedsrelateret usikkerhed i deres hverdagsliv. Med udgangspunkt i denne opfattelse af engagement i sundheds aktivitet kan underprivilegerede borgeres anvendelse af teknologi til håndtering af sundhed i hverdagen beskrives som afhængig af, hvorvidt teknologien tager højde for og støtter det nødvendige og komplekse samspil mellem personlige og kontekstuelle betingelser, samt støtter borgerne i at kunne lave strategier for hvordan de kommer fra undersøgelse mod handling, i den daglige håndtering af sundhed i hverdagen.

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LIST OF PAPERS

This thesis is based on the following papers, referred to by their Roman numerals.

- I. Madsen, J., Kanstrup, A. M., & Josephsson, S. (2016). The assumed relation between occupation and inequality in health. *Scandinavian Journal of Occupational Therapy*, 23, 1–12. Doi: 10.3109/11038128.2015.1075065.
- II. Madsen, J., Kanstrup, A. M. (20XX). Technology use in everyday health management among underprivileged adults. Manuscript submitted for publication.
- III. Madsen, J., & Josephsson, S. (2017). Engagement in occupation as an inquiring process: Exploring the situatedness of occupation. *Journal of Occupational Science*, 1–13. Published online. Doi: <http://dx.doi.org/10.1080/14427591.2017.1308266>

The papers are printed in volume II of the thesis.

LIST OF ABBREVIATIONS

HP	Health Promotion
HCI	Human-computer Interaction
HIT	Health Information Technology
HPT	Health-promotion Technology
ICT	Information and Communication Technology
OS	Occupational Science
OT	Occupational Therapy
WFOT	World Federation of Occupational Therapists
WHO	World Health Organization

CHAPTER 1. INTRODUCTION

This doctoral thesis addresses the problem of inequality in health and focuses on how citizens in underprivileged situations experience and manage health-related problems in their everyday lives, with a particular focus on their use of technology for engaging in health-related occupation.

This is researched within the field of occupational science (OS) and approached through the lens of Deweyan pragmatism. The thesis is thus grounded within OS, which is described as a science of everyday living unfolded through studies of the purpose, meaning and complexity of human occupation (Wilcock, 2006; Wilcock, 2005); the thesis is also theoretically motivated by John Dewey's perception of humans to be continuous, internal to, inseparable from and part of the world because of their actions (Dewey, 1938; Dewey, 1958).

The thesis is based on three consecutive studies:

Study I: A state-of-the-art literature study to contribute knowledge of how relevant areas of concern have been described and conceptualized within contemporary occupational science and therapy literature.

Study II: An empirical study serving to contribute empirical knowledge about underprivileged citizens' use of technology for engaging in health-related occupation.

Study III: A theoretical study aiming to contribute with a theoretical understanding of engagement in occupation from a situated perspective.

As illustrated in Figure 1 (Structure of the thesis), the thesis consists of nine chapters. Chapter 1 introduces the thesis. After this introduction, Chapter 2 presents the background of this thesis. In Chapter 3, I describe the theoretical approach of the thesis, and in Chapter 4, 5 and 6, I present the three consecutive studies that form the basis of this thesis, including findings and discussions of these and limitations of the studies. In Chapter 7, I discuss the findings from the studies in relation to the overall aim of the thesis as well as the theoretical and methodological approaches applied in the studies. In Chapter 8, I present the conclusions of the thesis by answering the three research questions and the overall research question. Finally, the limitations of the thesis and proposals for future work are presented in Chapter 9.

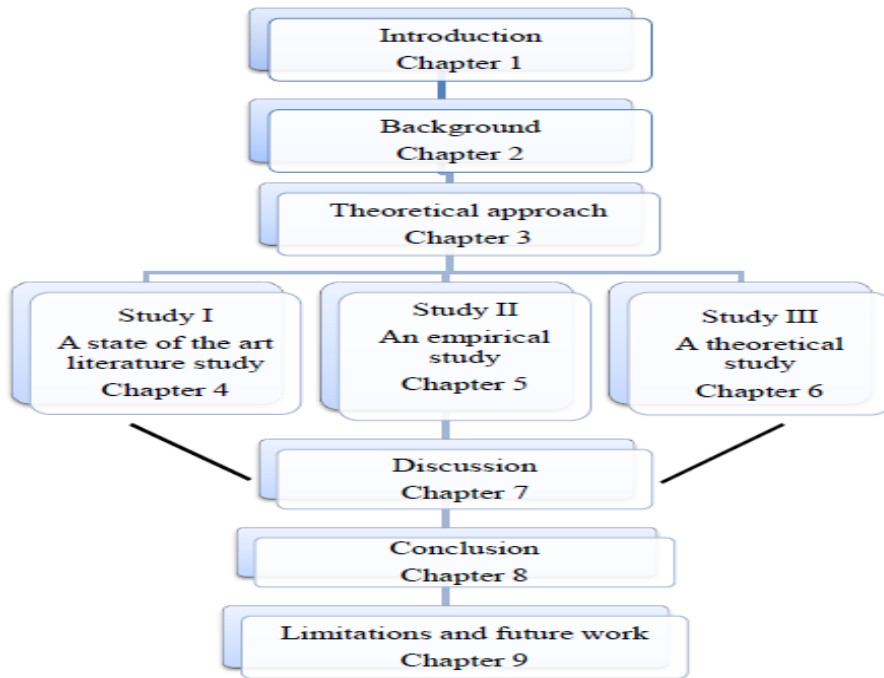


Figure 1: Structure of the thesis

1.1. SETTING THE SCENE

The challenges of improving health for people of all ages and conditions have been regarded as of high political value throughout the years (UNESCO, 2015; United Nations, 2000; World Health Organization, 2014). In particular, factors creating inequality in health are highlighted as an important area of exploration within health promotion (HP) policies as a basis for taking action to reduce health inequalities. HP programs are defined as the process of enabling people to increase control over and improve their health (European Union, 2015; Mittelmark, Kickbusch, Rootman, Scriven, & Tones, 2008; Tones & Green, 2004; World Health Organization, 2014).

As within several other areas of health-related research, inequality in health has been the subject of growing attention within OS. Yet several researchers within OS have pointed out that health inequalities are rarely explored from an occupational perspective (Bass-Haugen, 2009; K. R. W. Hammell & Iwama, 2012; Lysack & Adamo, 2013; Madsen, Kanstrup, & Josephsson, 2016). Research on inequality in

health and its relation to occupation is thus needed to bridge a contemporary knowledge gap within OS regarding how to take action on health inequalities.

Underprivileged citizens have been pointed out as people for whom it is necessary to make special efforts in order to promote their health, due to substantial economic costs on a societal level (Diderichsen et al., 2012; Michie, Jochelson, Markham, & Bridle, 2009; World Health Organization, 2010). The role of technology in HP programs targeting health inequalities has also been the subject of growing attention (Haux, 2006; Lucas, 2008; OECD's Directorate for Science, Technology and Innovation (DSTI), 2016). In this context, researchers within human-computer interaction research (HCI) and health information technology (HIT) have stressed a missing focus on effective health applications addressing the impact of underprivileged citizens' ability to gain control over and improve their health (Bull, 2010; Khan, Ananthanarayan, & Siek, 2011; A. Parker et al., 2012; A. G. Parker & Grinter, 2014; Siek, LaMarche, & Maitland, 2009). However, research on how citizens in underprivileged situations experience and interact with technology as part of their everyday health management is rare.

Some researchers argue that fundamental causes creating inequality in health are rooted in everyday life (Frohlich & Potvin, 2008). A lack of focus on everyday life in the development of HP programs in the context of inequality may therefore be problematic. From the perspective that problems of imbalances in health conditions can be viewed as real-life problems calling for a problem-solving approach, knowledge on underprivileged citizens from a situated perspective on everyday life can thus be argued as relevant in better tailoring HP programs to this group. Yet the character of the everyday lives of underprivileged citizens, how they experience being in underprivileged situations and how they problem solve in relation to their everyday health management has seldom been explored in the context of inequality in health.

Furthermore, understandings of the relationship of occupation and technology have always played a central role within OS research in the context of occupational therapists' professional expertise on assistive technology (Ivanoff, Iwarsson, & Sonn, 2006; Schaper & Pervan, 2009). The fast technological advancement within society, however, poses demands on OS and occupational therapy (OT) practice. Considering that OS aims to explore how engagement in occupation can address health concerns of the 21st century and is intended to provide the profession of OT with its own scientific and research base to inform practice (F. Clark & Lawlor, 2009; F. A. Clark et al., 1991), updated knowledge concerning technology use in everyday life is needed within OS. However, research within OS focusing on new digital technologies as aids for engagement in occupation is limited (Ivanoff et al., 2006; Schaper & Pervan, 2009). This is problematic, since more and more initiatives are focusing on integrating digital technologies in HP programs, because digital technology is a primary tool for most citizens in the western world. For example, in Denmark, where the research presented in this thesis was conducted, citizens' IT use in 2016 was reported to be noticeably higher than six years earlier. Half of the Danes

(16–89 years) indicated that they largely felt equipped to use the Internet with their IT skills, and 91 percent of families had Internet access at home (Tassy, 2016). But no research concerning use of technology by underprivileged groups of citizens in everyday life has been identified within OS.

Finally, HP programs targeting underprivileged citizens have mostly been planned on the basis of knowledge derived from quantitative research focused on understanding inequality in health from the socioeconomic patterns of health and disease (P. Braveman & Gottlieb, 2014; Kawachi, Subramanian, & Almeida-Filho, 2002; Popay, Williams, Thomas, & Gatrell, 1998). However, studies show that although HP programs have resulted in gains for a range of health indicators, not all groups of citizens have benefited from this. Simultaneously, inequality in health in relation to predominantly underprivileged groups of citizens has increased (Frohlich & Potvin, 2008; World Health Organization, 2010). For this reason, research indicates that citizens in underprivileged situations are not receiving the help needed and that contemporary HP programs fail to support this group of citizens in enabling them to increase control over and to improve their health. This calls for a rethinking of traditional strategies and methods of HP targeted to underprivileged citizens.

In addition, a growing need for research generating knowledge about engagement in occupation as situated within social and political contexts rather than research on occupation as grounded only within individuals has also emerged within OS (R. M. Aldrich, 2008; Cutchin, Aldrich, Bailliard, & Coppola, 2008). Concurrent with the growing awareness of occupation as contextually situated, researchers have pointed to the need for research into the relationship of occupation and situation and have adopted Deweyan pragmatism for the study of this matter (R. M. Aldrich, 2008; R. M. Aldrich, 2011; Cutchin, 2013; V. A. Dickie, 2010; Holahan, 2014; A. V. Kirby, 2015; Kuo, 2011; Madsen et al., 2016).

In this doctoral thesis, I wish to contribute to the theoretical development concerning research on inequality in health and knowledge on technology use for engagement in health-related occupation within OS. Following the tendency within OS scholarship to apply a societal and community perspective, I have chosen a pragmatic approach as a point of departure. Hopefully, my suggestion for theoretical knowledge presented in this thesis will likewise be useful in future research concerning underprivileged groups of people and in developing HP programs as well as HP technologies for this group of citizens.

The thesis empirically studies underprivileged citizens' use of technology for everyday health management from an OS perspective. However, as an educated occupational therapist becoming a doctoral student within a program of technology, I had a rather broad entry into the research field of my work. This was primarily characterized by my limited knowledge on digital research. Hence, for the sake of developing such knowledge, I committed to placing myself as an occupational scientist in communities focusing on HCI and HIT and to obtaining knowledge from HCI and HIT research, which characterizes this thesis. Along the way, this

motivated me to exemplify the idea that OS holds knowledge useful in the call for situated perspectives within research on the design of HPT.

1.2. AIM OF THE THESIS

Overall, the aim of this thesis is to develop conceptual knowledge on underprivileged citizens' engagement in health-related occupation. Attention is placed on how technology is used for everyday health management by underprivileged citizens experiencing health challenges and living in residential areas identified as districts with health inequalities.

The thesis includes three studies that contribute with a) knowledge on the literature on how health inequalities, high-risk areas of health and engagement in health can be described and analyzed from an occupational science perspective (Study I), b) empirical investigation of how underprivileged adults use technology for everyday health management (Study II) and c) how John Dewey's theory of inquiry can contribute to an examination of the situatedness of occupation from the perspective of how situation and occupation are related (Study III).

CHAPTER 2. BACKGROUND

In this chapter, I will argue further for the need of knowledge to better understand how to support underprivileged citizens' engagement in health-related occupation, and that their use of technology in doing so is a relevant area of research within OS. I will present the rationale for the thesis and will outline current knowledge within relevant policy documents and research literature within OS, social science, medicine, epidemiology, public health and HCI and HIT research. In addition to this, I will describe central concepts applied in this thesis, along with providing working definitions of these. The sections that follow are thus written to provide a framework for the three studies forming the basis of this thesis.

2.1. INEQUALITY IN HEALTH

Factors that create inequality in health are an important area of health promotion policies that should be explored to take action to reduce health inequalities (European Union, 2015; World Health Organization, 2012).

The World Health Organisation (WHO) (1984) has conceptualized health in the following way:

...the extent to which an individual or group is able to realize aspirations and to satisfy needs, and to change or cope with the environment. This is a dynamic model, in which health is seen not only as a state, but as a resource for everyday life. It is a positive concept, emphasizing social and personal resources as well as physical capacities. (p. 3)

In addition, the Ottawa Charter frames the notion that health is created in the context of everyday life, and it highlights the fact that health is “a resource for everyday life, not the objective of living” (Kickbusch, 2003). In this thesis, I view health from the perspective of OS. A fundamental viewpoint in this thesis is thus that *occupation is a core foundation for health*. This is based on the assumption that anything that reduces a person's ability to do, engage and participate in occupation has the potential to negatively impact the health of the individual. Further, the health impact of doing, engaging or participating in occupation depends on personal and social contexts, the nature of the occupation and environmental conditions (Hocking, 2013; Moll, Gewurtz, Krupa, & Law, 2013; Pettican & Bryant, 2007; Wilcock, 2006; Wilcock, 2005). In this thesis, I apply the following definition of health suggested by Hocking (2013): Health is a resource that enables people to participate in the necessary, valued and meaningful occupations of their culture, and conversely, participation is the means by which health and well-being are created, experienced and restored.

The theme of inequality in health describes the fact that health risks and diseases are socially skewed in society and that some citizens are lower socially positioned and are characterized by statistically higher morbidity and mortality rates. As such, inequality in health is usually presented as the difference in health status between socioeconomic groups. Inequalities in health are further influenced by geographic location, employment status, gender, ethnic group, financial security and the built environment as well as the health system and rate of mortality. Some health inequalities are even described as the result of natural biological differences or the free choices of individuals (Diderichsen et al., 2012; Graham, 2009; Whitehead, 2007). The WHO highlights the fact that inequality in health is a significant matter of the social determinants of health as a collective set of conditions in which people are born, grow, live and work. The WHO further notes that in turn, these conditions are shaped by a powerful overriding set of forces: economics, social policies and politics (World Health Organization, 2012). This means that broad-based policy and multisectoral action is essential to tackle inequalities in health. In this thesis, I apply the following working definition of health inequalities put forward by the WHO (2012):

Avoidable inequalities in health between groups of people within countries and between countries. These inequities arise from inequalities within and between societies. Social and economic conditions and their effects on people's lives determine their risk of illness and the actions taken to prevent them becoming ill or treat illness when it occurs. (p. 1)

As an indication of the extent of the problem of inequality in health, the volume of policy documents addressing the problem of inequalities in health from various perspectives is substantial. Overall, policy priorities at both global and national levels focus on equal health development and health security for people of all ages and conditions (Danish Health and Medicines Authority, 2013; European Union, 2015; UNESCO, 2015; United Nations, 2000; World Health Organization, 2014). As examples, The Danish Ministry of Prevention and Health and the European Union have highlighted the importance of taking account of particular health problems existing among underprivileged groups of citizens. The examination of possible solutions to particularly underprivileged citizens' health problems has also been stressed as an important area of interest (Danish Health and Medicines Authority, 2013; European Union, 2015; Ministeriet for forebyggelse og sundhed, Statens Serum Institut, Sundhedsstyrelsen, 2013). Policy documents thus highlight the importance of taking account of and examining solutions to health problems among people in underprivileged situations in particular, as a foundation for providing suitable HP interventions.

A review of relevant policy documents shows that policies at a global and national level focus on both macro-environmental and micro-environmental factors as the main determinants of inequalities in health. Hence, politics recognizes causes affecting the health of underprivileged citizens, for instance, as multifaceted and complex. From a governmental perspective, interventions targeting both

socioeconomic factors and the physical and social environment as well as adverse health behaviors and access to health care are thus needed to tackle the problem of inequality in health (Diderichsen et al., 2012; European Union, 2015; Ministeriet for forebyggelse og sundhed, Statens Serum Institut, Sundhedsstyrelsen, 2013; UNESCO, 2015; United Nations, 2000; World Health Organization, 2014).

Through time, research within social science and medicine as well as epidemiology and public health have confirmed the complexity of inequality in health and have pointed to the composite interaction of social, economic, environmental and personal factors as the root causes of such inequalities. In light of this, researchers stress that the problem of inequality in health is deep-rooted and requires constant systematic efforts on multidimensional levels, that is, on international, national and regional levels, on city and local community levels and finally, on group, family and individual levels (P. Braveman & Gottlieb, 2014; Gordon, 1999; Graham, 2009; Kosteniuk & Dickinson, 2003; Michie et al., 2009). Research has however similarly identified patterns within different groups at risk of inequalities that complicates the problem of inequality in health even more; that the characteristics of the health risks individuals within different groups as risk face differ in highly multifarious ways with respect to mortality, morbidity, risk behavior and health care utilization, depending on the chosen measure of health status (Diderichsen et al., 2012; Gordon, 1999; Kosteniuk & Dickinson, 2003; Michie et al., 2009; Wilkinson & Marmot, 2003).

Comprehensive evidence has been generated in empirical studies within social science, medicine and public health on the link between environmental factors, health and levels of inequality in health. The best known factors for environmental influence on health status include the location of areas close to highways, industrial areas and waste sites, poorer housing quality, residential crowding and noise exposure (Adler & Newman, 2002; Bernard et al., 2007; Gordon-Larsen, Nelson, Page, & Popkin, 2006; Macintyre, Ellaway, & Cummins, 2002; Mitchell & Popham, 2008; Voigtländer, Vogt, Mielck, & Razum, 2014). Research within social science, medicine and public health likewise indicates that social relations within high-risk areas of health may influence individual health status. For example, isolation and a lack of social engagement are strong predictors of a person's health status, since socially isolated citizens have a relative risk of mortality ranging from between 1.9 and 5 times greater than that of citizens having better social engagement and connections. In relation to this, social engagement and connections have been found to be affected by broader environmental issues such as institutional frameworks, urban planning and features of the community, for instance, transport, recreation and shopping facilities (Adler & Newman, 2002; Bernard et al., 2007; Gordon-Larsen et al., 2006; Macintyre et al., 2002; Mitchell & Popham, 2008; Voigtländer et al., 2014). On the basis of such studies, there is general acceptance that both physical and social environmental conditions serve as key determinants when focusing on how to solve the problem of inequality in health (Adler & Newman, 2002; Diderichsen et al., 2012; Michie et al., 2009; Whitehead, 2007; Wilcock, 2006). This is reflected in the review of policy documents that identify a focus on environmental

conditions as key determinants for inequality in health. In particular, policies prioritize interventions improving living conditions for residents living in community settings described as underprivileged, because these areas are correlated with a high risk of health problems for the residents living there. Underprivileged residential areas or high-risk areas of health are identified as linked with higher morbidity and mortality rates compared to those of better-off neighborhoods (Diderichsen, Andersen, & Manuel, 2011; Diderichsen et al., 2012; European Union, 2015; Ministeriet for forebyggelse og sundhed, Statens Serum Institut, Sundhedsstyrelsen, 2013; UNESCO, 2015; United Nations, 2000; World Health Organization, 2014).

Underprivileged residential areas are known to house a majority of citizens with a low socioeconomic status. These citizens are often less resourceful, socially deprived and generally lower positioned socially, with low income and little to no education (Adler & Newman, 2002; Diderichsen et al., 2011; Diderichsen et al., 2012; House, Kessler, & Herzog, 1990; Sundhedsstyrelsen, 2007). Moreover, citizens living in these areas are known to lead unhealthy lifestyles (Diderichsen et al., 2012; Poortinga, Dunstan, & Fone, 2008). For example, studies within social science and medicine have found empirical relationships between underprivileged environments and the health conditions of their citizens (Bernard et al., 2007; Macintyre et al., 2002), and a survey of health conditions in so-called vulnerable neighboring environments in Denmark showed that citizens living in these areas generally have a poorer health status than citizens living in residential areas close by (Diderichsen et al., 2012).

In this thesis, I define underprivileged residential areas and high-risk areas of health as districts with health inequalities by comparison to geographically adjacent better-off residential areas known to house a majority of citizens with a low socioeconomic status (Adler et al., 1994; Adler & Newman, 2002; Diderichsen et al., 2012; Sundhedsstyrelsen, 2015). Given the described link between health inequality and certain residential areas, the focus of this thesis is on such a residential area in Denmark, and the empirical research is conducted in a residential area identified by the national health authorities as a high-risk health area.

2.1.1. A MISSING FOCUS ON INEQUALITY IN HEALTH WITHIN OCCUPATIONAL SCIENCE

HP practice has been described as a primary task of OT, and governing bodies for OT have encouraged occupational therapists to focus on HP strategies in their practice. However, research on how occupational therapists can contribute to promoting health at different socioeconomic levels is lacking (Holmberg & Ringsberg, 2014; Pettican & Bryant, 2007; The World Federation of Occupational Therapists (WFOT), 2006; Wood, Fortune, & McKinstry, 2013; World Health Organization, 1986). In relation to this, scholars within OS have stressed that filling this knowledge gap requires an in-depth understanding of how different circumstances within occupations affect health and how health can be promoted

using an occupational perspective (Hocking, 2013; Holmberg & Ringsberg, 2014; Wilcock, 2006).

The relevance of exploring inequality in health from an OS viewpoint has been discussed in the literature. Nevertheless, several scholars within OS have pointed out that health inequalities are rarely explored from an OS perspective, and the OS literature has not evolved to reflect the growing emphasis on inequality in health and related issues (Bass-Haugen, 2009; B. Braveman & Bass-Haugen, 2009; Braveman, Brent. Gupta, Jyothi. Padilla, René., 2013; K. R. W. Hammell & Iwama, 2012; Lysack & Adamo, 2013). Researchers within OS have also highlighted the fact that research on the relationship of occupation and health inequality among different age groups and populations is needed. This has in fact been emphasized as a priority in the OS research agenda, due to a limited understanding of the environmental and personal characteristics that are either assets for or barriers to occupational performance related to income levels (Bass-Haugen, 2009; B. Braveman & Bass-Haugen, 2009; K. R. W. Hammell & Iwama, 2012; Hocking, 2013; Laliberte Rudman, 2013; Wright-St Clair, 2012). Finally, it has been claimed that OS should be a transformative, critically informed discipline that addresses the relation between occupation and inequalities, but this requires an expansion of knowledge on how occupation has been conceptualized and studied thus far in relation to inequality in health and related issues (Laliberte Rudman, 2013).

Overall, the missing research on inequality in health and related areas within OS and OT indicates that basic theory and reasoning as well as empirical studies on the relationship of occupation and inequality are lacking. As a point of departure in filling this gap, and in light of the described causes of inequality in health in section 2.1, this calls for an exploration of how inequality in health, high-risk areas of health and engagement in one's own health have been described and conceptualized within contemporary OS and OT literature.

2.2. UNDERPRIVILEGED CITIZENS

Underprivileged citizens have been pointed out within policy documents, health organizations and research as people for whom it is necessary to make special efforts to promote their health, due to substantial economic costs on a societal level (Danish Health and Medicines Authority, 2013; Diderichsen et al., 2012; Michie et al., 2009; Sundhedsstyrelsen, 2007; Sundhedsstyrelsen, 2009; World Health Organization, 2010; World Health Organization, 2014). However, the lack of data on the influence of HP efforts targeting underprivileged groups has led to a growing argumentation that this area requires special attention (Diderichsen et al., 2012; Michie et al., 2009; Showell & Turner, 2013b). Underprivileged citizens are defined in this thesis as “a segment of the population that does not have access to the rights or benefits granted to the rest of society, often because of low economic or social status” (Environmental Terminology and Discovery Service, 2015).

Research within social science, medicine and community health has proved that living an everyday life with generally lower socioeconomic status is associated with less healthy habits and behaviors, resulting in poorer health outcomes. Research has shown clear evidence that underprivileged people suffer more from health problems than do people from nondisadvantaged backgrounds. This is defined as the social gradient (Kosteniuk & Dickinson, 2003; Michie et al., 2009). Some of the factors that affect the social gradient are upbringing, health behaviors, housing, education, networking, ethnicity, employment and the economy. Quantitatively, smoking, alcohol, physical inactivity and obesity risk factors together with their underlying causes have created 75% of today's social inequalities in the disease burden (Danish Health and Medicines Authority, 2013). Chronic obstructive pulmonary disease, depression, alcoholism, heart disease, lung cancer and substance abuse account for two-thirds of inequalities in the disease burden and are more prevalent among underprivileged citizens. For underprivileged groups of citizens, the consequences of exposure to disease form a negative vicious cycle that is hard to break with normally effective HP and disease prevention. In addition, public health research has revealed that low socioeconomic status is correlated with low health literacy levels (Michie et al., 2009; Ministeriet for forebyggelse og sundhed, Statens Serum Institut, Sundhedsstyrelsen, 2013).

Based on this, underprivileged citizens are often described as standing to benefit the most from reflecting on their health practices in everyday life, due to their increased risk for morbidity and mortality (Anderson & Armstead, 1995; Graham, 2009; Khan et al., 2011). However, researchers and health organizations have raised concerns about how studies indicate that even though HP programs have provided positive results on a range of health indicators, there are still groups of citizens that have not benefited from these interventions. In particular, inequality in health in relation to underprivileged groups of citizens seems to have increased (Diderichsen et al., 2012; European Union, 2015; Frohlich & Potvin, 2008; World Health Organization, 2010; World Health Organization, 2014). Scoping the literature, however, shows that citizens in underprivileged life situations find it more difficult to achieve positive results in HP programs. Underprivileged citizens are also described as difficult to recruit to and retain in HP efforts, and researchers have highlighted the fact that underprivileged citizens may achieve lower success in HP programs due to their starting levels of behavior and a lack of support from their social environments (Danish Health and Medicines Authority, 2013; Diderichsen et al., 2011; Diderichsen et al., 2012; Graham, 2009; Michie et al., 2009; Ministeriet for forebyggelse og sundhed, Statens Serum Institut, Sundhedsstyrelsen, 2013; Whitehead, 2007). Overall, this indicates that knowledge within HP programs on citizens in underprivileged situations can be developed further to better reach the target group, that this group of citizens requires specially tailored interventions for promoting their health, and that previous knowledge obtained on this particular group at risk may have been produced from a misleading perspective. Considering that underprivileged citizens have been pointed out as people for whom it is necessary to make special efforts in order to promote their health (Diderichsen et al.,

2012; Michie et al., 2009; Showell & Turner, 2013b), it can thus be argued that this area requires special attention.

In relation to this, researchers within public and community health have called for multidimensional perspectives on the complexity of causations within inequality in health, as a foundation for developing HP programs especially targeting underprivileged citizens (Frohlich & Potvin, 2008; Michie et al., 2009). From an OS position, it can thus be asserted that there is a need for knowledge on underprivileged citizens' needs and problems and how they deal with these from an everyday life perspective, as a basis for supporting them in their everyday health management through HP programs. By taking an OS perspective on underprivileged citizens' everyday lives, a fundamental viewpoint in this thesis is that engagement in occupation is a core foundation for health. This is based on the assumption that anything that influences a person's ability to do and participate in occupation in everyday life has the potential to positively or negatively impact the health of the individual (Wilcock, 2006; Wilcock, 2005). Further, the health impact of engaging in occupation depends on the personal, social and environmental context within which it takes place and is performed (Hocking, 2012; Hocking, 2013; Moll et al., 2013).

Spurred by the third study presented in this thesis, I apply the following working definition of engagement in occupation: An explorative and practical action of inquiry, uniting humans with situations that are implicitly changeable (Madsen & Josephsson, 2017). In relation to this, and based on the literature of Dewey (1938, 1958), everyday life is defined in this thesis as the situationally affected and changeable setting for humans to overcome problems and uncertainty through engagement in occupation.

2.2.1. PROMOTING THE HEALTH OF UNDERPRIVILEGED CITIZENS

In this thesis, I apply the WHO's description of HP as "the process of enabling people to increase control over, and to improve, their health. It moves beyond a focus on individual behavior toward a wide range of social and environmental interventions" (World Health Organization, 2015a). This definition is derived from the Ottawa Charter, which clarified the need to change the living conditions of people to promote health, and which is regarded as the foundation for what we know today as holistic HP. This holistic approach to HP recognizes that ensuring health goes beyond efforts centered on health care services. Instead, holistic HP focuses on societal factors, the need for collaboration between sectors and the creation of healthy and equal everyday lives. It thus covers the full range of health determinants and recognizes the importance of broad contextual perspectives on health. Overall, in this thesis, HP is referred to as actions intended to strengthen the skills and capabilities of individuals and groups and change social, environmental, political and economic conditions to shape their impact on populations and individual health (Egger, Spark, & Donovan, 1999; Ewles & Simnett, 2003; Kickbusch, 2003; Mittelmark et al., 2008; Nutbeam, 1998; Tones & Green, 2004).

HP differs from prevention or risk reduction interventions by using a broader nonspecific approach. It does not target a single risk or disease, but instead, its focus is placed on improving the individuals' and groups' ability to improve their own health in the contexts in which they are living. HP thus seeks to create a context in which the health of individuals and groups can develop and be maintained. Often this is done by targeting support in neighborhoods and supporting groups in taking care of local issues affecting health. For instance, concrete areas of intervention can include food choices in the school cafeteria, setting up exercise groups, arranging for volunteers to assist elderly people etc. (Egger et al., 1999; Ewles & Simnett, 2003; Tones & Green, 2004). Policy documents emphasize that HP interventions intended to promote the health of underprivileged citizens should be based on knowledge of the citizens' social and health conditions as well as other organizations' experiences concerning these. Furthermore, HP activities should be planned to match the targeted citizens' needs and resources, since the targeted groups of citizens are often made up of many different citizens characterized by diverse risk behaviors, vulnerabilities and resources (Diderichsen et al., 2011; Sundhedsstyrelsen, 2009). Based on this, it can be concluded that targeting HP programs to underprivileged citizens includes focusing on individual as well as contextual elements.

In relation to this, health professionals, governmental and nongovernmental agencies and foundations have increasingly turned to empowerment as a strategy for reducing health inequality among underprivileged citizens (Wallerstein, 2006). Overall, empowerment can be defined as "a process by which people, organizations and communities gain mastery over their affairs" (Rappaport, 1987). Empowerment concerns the individuals' right to pursue their conceptions of life and quality of health and to increase control over their lives and their health. Individual empowerment strategies thus focus on enhancing citizens' sense of control over their lives by strengthening their confidence and self-esteem and increasing their coping mechanisms in relation to health (Casiday, Kinsman, Fisher, & Bamba, 2008; Wentzer & Bygholm, 2013). Accordingly, research within HP has framed "empowering individuals" as an important intervention focus when promoting the health of underprivileged citizens. Person-based strategies, such as improving an individual's knowledge, beliefs, self-esteem and practical competence in life skills, are thus highlighted as key determinants as a basis for maintaining and improving underprivileged citizens' engagement in health (Jackson et al., 2006; Whitehead, 2007).

However, it has been emphasized that a unilateral focus on individual empowerment within HP programs may be problematic, since individuals' health is considerably influenced by environmental factors. Empowerment therefore also concerns the overcoming of organizational and environmental barriers within society affecting citizens' health (Wallerstein, 2006; Woodall, Raine, South, & Warwick-Booth, 2010). In relation to the scope of this thesis, empowerment can thus be described as concerning the creation of foundations for underprivileged citizens to gain control of their health-related decisions in a positive manner (Casiday et al., 2008).

Overall, research within HP practice has found that empowerment can have a positive influence on citizens' self-efficacy, self-esteem, sense of community and sense of control. However, this evidence has also been problematized as far from robust (Wallerstein, 2006; Woodall et al., 2010). Embedded in these empowering perspectives lies an implicit focus on citizens' ability to create a sense of control over their health through individual management and control. Consequently, the concept of "self-management" has received emphasis within research on HP and has become both a popularly used term and a goal for HP interventions focusing on citizens' healthful behaviors (Barlow, Wright, Sheasby, Turner, & Hainsworth, 2002). Hence, a particular issue within HP strategies is the goal of developing personal skills to engage with health, based on self-responsibility for actions regarding everyday health (Acton & Malathum, 2000; Jackson et al., 2006).

Citizens possessing the ability to self-manage their health by making healthy decisions in the context of everyday life are described as health-literate persons. Embedded in HP, applying a self-management approach is thus a strategy to teach the citizens to seek information, take responsibility and gain control over their own health (Kickbusch & Ratzan, 2001; Nutbeam & Kickbusch, 2000). The WHO defines health literacy as "the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand, and use information in ways which promote and maintain good health" (Kickbusch & Nutbeam, 1998). Scoping the literature reveals a range of explanations of self-management, and researchers have problematized a missing common definition (Barlow et al., 2002). In light of the focus within this thesis, I apply the following definition of self-management put forward by Clark et al. (1991): Day-to-day tasks an individual must undertake to control or reduce the impact of disease on physical health status. At-home management tasks and strategies are undertaken with the collaboration and guidance of the individual's physician and other health care providers (p. 5). From this definition, it can be argued that heightening underprivileged citizens' self-management has to do with strengthening individuals' management of health in their everyday lives.

In all, recommendations from policy documents and findings from interdisciplinary research on HP indicate that the dynamics of everyday life and the individual needs and problems of underprivileged citizens are important sources of knowledge when planning HP programs. In addition, it can be concluded that empowerment perspectives, self-management techniques and tools to support the citizens in healthy everyday behavior are of importance. Accordingly, the inseparable link between everyday life and health is widely recognized as an important factor within research on health and the practices of HP (Egger et al., 1999; Ewles & Simnett, 2003; Mittelmark et al., 2008; Tones & Green, 2004). However, researchers have stressed that the emphasis within contemporary HP practice and research is on planning HP interventions from an understanding of health behavior as individually driven and cognitively motivated. However, such perspectives may favor an understanding of health behavior as unitary in character and may end up "blaming the victim" if appropriate health behavior is not obtained (Horrocks & Johnson,

2014; Pincus, Esther, DeWalt, & Callahan, 1998). Considering the multidimensional causations of inequality in health, research within HP thus calls for situated approaches to inform ways of improving health (Horrocks & Johnson, 2014).

2.3. THE USE OF TECHNOLOGY IN PROMOTING THE HEALTH OF UNDERPRIVILEGED CITIZENS

In an HP perspective, there are a myriad of definitions and types of technology. Overall, *health technologies* cover a range of different kinds of technologies intended to improve the health and lives of people in different situations. Health technologies thus include pharmaceuticals, medical devices, procedures or surgical techniques, communication and information systems, assistive devices and eHealth solutions (Bull, 2010). As examples, medical devices are described as essential in health care delivery as tools for prevention, diagnosis, treatment and rehabilitation (Bull, 2010; OECD's Directorate for Science, Technology and Innovation (DSTI), 2016). Assistive devices serve to improve health outcomes, enhancing abilities and increasing independence (Cook, Polgar, Cook, & Polgar, 2008). Moreover, eHealth solutions describe the use of information and communication technologies (ICT) to support health systems and services; this can include everything from SMS appointment reminders on a mobile phone to more complex electronic medical record systems (Kay, 2011). In particular, HIT is described as patient-centered health technology and as a key element in streamlining processes, improving quality and harnessing costs within health care in general and within HP (Zeng, Reynolds, & Sharp, 2009). Overall, the number of technologies relevant in relation to promoting the health of underprivileged citizens can be considered multiple.

The WHO highlights the fact that HIT will play a central role in improving health outcomes and enhancing people's ability to manage health in general (World Health Organization, 2015b), which at the same time has been pointed out as a research area open to development (Christopher Gibbons, 2011; Lintonen, Konu, & Seedhouse, 2008). The types of applications considered to be HIT cover a wide range of technologies, such as consumer e-health tools, population health information systems and electronic health records. The broad range of technologies existing within HIT is covered within the definition of HIT as:

Hardware, software, integrated technologies or related licenses, intellectual property, upgrades, or packaged solutions sold as services which are designed for or support the use by health care entities or patients for the electronic creation, maintenance, access, or exchange of health information. (NORC, 2010)

Several researchers have pointed out that an examination of the potential role of HIT in solving the problem of inequality in health is an important matter (Bull, 2010; Christopher Gibbons, 2011; Khan et al., 2011; NORC, 2010; A. Parker et al., 2012; Siek et al., 2009). HCI researchers are thus increasingly examining the role of HIT in HP programs targeting inequality in health from the perspective that HIT can help

people live in a more healthy way (Khan et al., 2011; A. Parker et al., 2012; A. G. Parker & Grinter, 2014; Siek et al., 2009). In relation to the growing focus on how HIT can promote health conditions for underprivileged groups of citizens, researchers have emphasized the need to engage with real people and real problems in the design process of HIT. In particular, those whose voices are unheard have been pointed out important to include in and engage with studies of HIT developed for underprivileged citizens (Bull, 2010; Moen & Brennan, 2005; A. Parker et al., 2012; Showell & Turner, 2013b; Siek et al., 2009; Turner, Kushniruk, Bertelsen, Falcon, & Showell, 2013). HIT assisting citizens in taking control over and improving their own healthy living in a certain context through behavior and lifestyle changes can be framed as health-promoting technologies (HPT) (Bull, 2010; Mittelmark et al., 2008; Mittelmark, 2000). HPT thus originates from HIT and is described as a relatively new research area (Bull, 2010; Siek et al., 2009).

Reviewing the literature for empirical design research into HPTs for underprivileged citizens reveals a focus within the research on disease and on the characteristics of residential areas. The technical approaches applied in the studies deal with technologies such as virtual advisory systems (King, Bickmore, Campero, Pruitt, & Yin, 2013), Internet/health-related websites (Atkinson, Billing, Desmond, Gold, & Tournas-Hardt, 2007), assistive reminder-based systems (Siek et al., 2009), photo and text messaging (by cell phones), interactive visualization software (touchscreen monitors) (A. Parker et al., 2012) and interactive consumer HIT(IT) in general (Jimison et al., 2008). Further research has been conducted to identify conceptual principles in developing technological interventions intended to improve the health habits of underprivileged citizens (Khan et al., 2011).

In addition, research concerning HPT has predominantly been conducted in the USA, which proves a lack of research on HPT in the European and Scandinavian context. However, research has shown that in order to make a difference for underprivileged citizens' engagement in health, the technology should be convenient and integrated into everyday life occupation (Jimison et al., 2008; Siek et al., 2009). Likewise, the need for an individual focus and adaptation within the technology is clear. Features such as communication back to the citizen with personalized tailored recommendations or advice (Jimison et al., 2008; King et al., 2013; Siek et al., 2009), the encouragement of citizens to take care of themselves and think about their own wellness (King et al., 2013; A. Parker et al., 2012; Siek et al., 2009) and the interpretation of established, individualized goals (Jimison et al., 2008; King et al., 2013) all prove the necessity of adjusting the technology to the individual. It has likewise been found that HPT should be designed to gradually help citizens shift health attitudes (Khan et al., 2011; A. Parker et al., 2012; Siek et al., 2009), for instance, by delivering activity advice or daily reminders related to healthier living (Jimison et al., 2008; King et al., 2013; Siek et al., 2009). The adjustment of adopted individual plans should also be possible (Jimison et al., 2008). It has also been stressed that when developing HPT, the technology should be community and culturally anchored (Khan et al., 2011; King et al., 2013; A. Parker et al., 2012) and should encourage and facilitate collective efforts within a community (A. Parker et

al., 2012). It has further been found that the technology should be designed to meet minimal language, health and computer literacy (King et al., 2013).

However, as shown in Appendix B, which provides an overview of empirical design research on health-promoting technologies for underprivileged citizens (identified in the review of literature as preparation for Study II described in this thesis), research focusing on technology with an HP aim and on its influence on the health of underprivileged citizens is limited. Although some empirical research within HCI and HIT has provided valuable knowledge on which technical approaches may be of importance in supporting underprivileged citizens in health management, there has likewise been less focus on how underprivileged people use technology in their everyday lives. In relation to this, Pacey (2001) has problematized the fact that a considerable amount of academic work has focused less on what humans actually do with technology in favor of focusing on the technology itself. Studies within HIT also point to the need to bridge the gap between the knowledge of how to design HIT on the one hand and insufficient knowledge about the everyday lives of people experiencing health challenges and their use of technology on the other hand (Brennan & Casper, 2015; Brennan, Downs, & Casper, 2010; Bull, 2010; A. Parker et al., 2012; Showell & Turner, 2013a; Showell & Turner, 2013b; Siek et al., 2009). Hence, knowledge is needed of the everyday lives of citizens in underprivileged situations and of their use of technology.

Due to the situated nature of everyday life, making it an inconstant phenomenon, everyday life forms the domain for engagement in occupation, which is known to affect health habits, health behavior and lifestyle in general. Health is thus constantly to be obtained, developed, maintained and challenged in the context of everyday life (C. Christiansen & Townsend, 2010; Hasselkus, 2006; Hasselkus, 2011; Wilcock, 2006). Consequently, it is important for health professionals to assemble knowledge about the everyday lives of citizens in underprivileged situations. Focus should be on how they live with health and life challenges and on the characteristics of how they manage this and the possible change processes they may master, since this is basic knowledge when planning targeted health promotion programs (Egger et al., 1999; Ewles & Simnett, 2003; Tones & Green, 2004). As such, everyday life can be seen as a contextual setting for HP to underprivileged citizens. Further, their engaging in everyday occupations can be seen as tools for obtaining, developing and maintaining health throughout life. Management of health is therefore constantly challenged in humans' everyday occupations, turning everyday life into a situated arena of knowledge and action and affecting health in general, thus the premise for HP (Hasselkus, 2006; Hasselkus, 2011; Wilcock, 2006). In relation to the use of technology in promoting the health of underprivileged citizens, research applying a situated approach to how citizens in underprivileged situations experience and interact with technology as part of their everyday health management is thus needed.

2.3.1. A MISSING FOCUS ON DIGITAL AIDS WITHIN OCCUPATIONAL SCIENCE

Research within OS has identified technology as a support for individuals to engage in occupation (Erickson, 2015). As applied in this thesis, technology for engagement in occupation covers both low-tech and high-tech devices applied in everyday life, including easily obtained and inexpensive devices as well as expensive and specialized devices (Cook et al., 2008). Thus, from an OS perspective, HPTs can be regarded as digital aids supporting individuals in engaging in health-related occupation.

Within OT practice, there is a long tradition of using assistive technology (AT), based on the professional stance that devices supporting the relationship between the person, environment and occupation can enhance occupational engagement and performance. Consequently, the amount of research within OS concerning this topic is of considerable size (Ivanoff et al., 2006; Schaper & Pervan, 2009). However, the technological advancement on a societal level has resulted in the development of assistive technology to become highly digitalized, and *everyday technology* has become an integral part of engagement in occupation in the everyday lives of most people (Engström, Lexell, & Lund, 2010; Malinowsky, Almkvist, Kottorp, & Nygård, 2010; Nygård & Starkhammar, 2007). As a result, OT practitioners are dealing with technologies of various kinds with increasing frequency (Erickson, 2015; Verdonck & Ryan, 2008), and new areas concerning research on “technology use in everyday life” are evolving within OS (Ivanoff et al., 2006; Schaper & Pervan, 2009).

For example, researchers have highlighted the use of information and communication technology (ICT) in everyday life as an area of interest for OS and OT, because computers in general have become integral to engagement in many occupations (Verdonck & Ryan, 2008). Furthermore, existing research has focused on everyday technology, that is to say, electronic, technical and mechanical equipment, and how these affect activities of daily living for citizens with disabilities (Engström et al., 2010; Malinowsky et al., 2010; Malinowsky, Nygård, & Kottorp, 2011; Nygård & Starkhammar, 2007). Researchers have also explored the use of digital technology within OT practice as means for the rehabilitation of adults suffering from acquired brain injury (Lundqvist, Grundström, Samuelsson, & Rönnerberg, 2010), for supporting children having difficulties with handwriting and communication in general (Handley-More, Deitz, Billingsley, & Coggins, 2003) and as cognitive aids for people with multiple sclerosis (Gentry, 2008).

Although there has been an increasing focus on high-tech devices of various types within OS, limited research within OS on the application of digitalized technology in relation to engagement in health-related occupation was identified in the review of the literature for this thesis. In particular, no research regarding underprivileged groups of citizens' use of technology in everyday life was identified within OS literature. Considering that digitalized technology is currently an integral part of

people's everyday lives, that HP is described as a primary task for OT (Holmberg & Ringsberg, 2014; The World Federation of Occupational Therapists (WFOT), 2006), and that a growing focus is present on the use of digital technology as aids for improving health outcomes in general and for underprivileged citizens in particular (World Health Organization, 2015b), the lack of knowledge within OS on the use of digital technology for engagement in occupation, and in particular the lack of contributions to how digital aids can improve health conditions among underprivileged citizens, can therefore be argued as problematic.

Because digitization more than ever sets the scene for humans' way of living and thus for their engagement in health-related occupation, studies within OS focusing on the subject may thus be regarded as important. It is also conceivable that the development of new digital technology and the increasing political focus on applying digital technology as aids for improving health outcomes will pose demands on research within OS. In light of this and of the identified lack of research within OS on inequality in health in general, it can be asserted that a knowledge gap within OS on underprivileged citizens' use of technology for engaging in health-related occupation is present, which qualifies research focusing on digital technologies and how they affect engagement in health-related occupation for underprivileged citizens.

2.4. THE SITUATED CHARACTER OF INEQUALITY IN HEALTH

Researchers within public health practice highlight the fact that causes of inequality in health are just as rooted in the everyday life situations of citizens and their health management as within overall macro-environmental and micro-environmental factors (Frohlich & Potvin, 2008). This indicates that inequality in health can be considered as situated in everyday life. Consequently, HP interventions must incorporate perspectives from situated and multifaceted approaches in the development of programs. Following a pragmatic approach based on the necessity to comprehend the processes characterizing how real-life problems are understood, resolved and acted upon (J. Garrison, 2001; Greenbaum, 2008), the problem of imbalances in health conditions and in people's everyday health management may likewise be regarded as real-life problems calling for a processual and problem-solving approach. From this point of view, inequality in health can be seen in terms of the situations and contexts of people's experience of everyday life practices and problems. However, a pragmatic approach can be difficult to work with because of its comprehensiveness and complexity (McCarthy & Wright, 2004).

Even though policy documents and research within social science, medicine, epidemiology and public health recognize the complex character of inequality in health and point to both macro-environmental and micro-environmental causes as main determinants, research on inequality in health has mainly focused on comprehending the complexity of inequality in health from socioeconomic perspectives on health and disease, mainly because macro-environmental factors (such as socioeconomic factors and the physical and social environment influencing

the everyday life of the individual) are believed to be central in the causality of inequalities in health, yet moderated by local social and community influences (P. Braveman & Gottlieb, 2014; Kawachi et al., 2002; Popay et al., 1998). Accordingly, most HP interventions tailored in the context of inequality in health have been designed on the basis of knowledge derived from this focus and not from a situated everyday life, processual, problem-solving approach.

Given the complexity of causation within inequality in health emphasized by several researchers as well as the perspective that inequality is rooted in everyday life, the situated character of inequality in health can thus be argued as equally important when planning HP interventions. For instance, such a perspective would address situations of underprivileged citizens' experience of everyday life practices and problems in relation to health management as inspiration for designing HP activities. However, limited research addressing inequality in health from a situated perspective has been identified during the writing of this thesis. For example, research has focused on individual comprehensions of living a life of inequality by focusing on "lay knowledge" in the form of narratives from groups at risk (Popay et al., 1998) and peoples own conceptions of the reasons for health inequalities (Blaxter, 1997). Although theoretical knowledge that is useful in guiding empirical work on how to model possible HP programs specifically for underprivileged citizens is needed (World Health Organization, 2010), it is thus conceivable that a situated everyday-life, processual, problem-solving approach to the problem of inequality in health is open for exploration.

2.4.1. THE NEED FOR PERSPECTIVES ON HOW SITUATION AND OCCUPATION ARE RELATED

As within research on public health in general, researchers within OS emphasize that changes in the concepts of health in society demand a focus on new occupational perspectives on health. An "occupational perspective" has been defined as "a way of looking at or thinking about human doing" (Njelesani, Tang, Jonsson, & Polatajko, 2014). Consequently, the most used perspective within OS, an occupational perspective on health, would imply a way of looking at or thinking about health from the perspective of human doing (or human occupation). However, studies have stressed the need for research on a contextually grounded perspective on the relationship of occupation and health (Hocking, 2013). As such, calls have been made for an exploration of perspectives on social, cultural and interactional aspects of the production of occupation as a frame for understanding the relationship of occupation and health (Fogelberg & Frauwirth, 2010; Hammell Whalley, 2013; Hocking, 2013; Moll et al., 2013; Wood et al., 2013).

This is furthermore in line with the argument that has emerged in recent years that human occupation is more of a societal and community-based phenomenon than an individual one, which has led to a growing need for research generating knowledge about engagement in occupation as situated within social and political contexts—or in other words, the situatedness of occupation (R. M. Aldrich, 2008; Cutchin et al.,

2008). As an example, the missing focus on inequality in health described in section 2.1.1 can be seen as a need to expand research within OS to include the social, cultural and interactional aspects of the production of occupation (Fogelberg & Frauwirth, 2010). Overall, the growing need for research on the situatedness of occupation within OS, in light of the relationship of occupation and health and of OS as a health-related scientific approach, can be seen as equivalent to the situated everyday-life, processual, problem-solving approach to inequality in health, which can be argued as open for exploration within HP research in general.

In the search for knowledge about the situatedness of occupation, researchers within OS have employed the Deweyan pragmatic perspective that human life is best understood by its fluid and dynamic interrelationships rather than by its discrete elements (Cutchin et al., 2008; Cutchin & Dickie, 2013a; V. Dickie, Cutchin, & Humphry, 2006; J. Garrison, 1999; J. Garrison, 2001), and Deweyan pragmatism has been applied as a platform for exploring the relationship of situations and occupation (R. M. Aldrich, 2011; Galvaan, 2015; Holahan, 2014; Kuo, 2011; van Nes, Jonsson, Hirschler, Abma, & Deeg, 2012). By applying Deweyan lenses, scholars within OS have identified occupation as actions that respond to the uncertainty that follows from problematic situations (R. M. Aldrich, 2008; Cutchin et al., 2008; Cutchin, 2013; V. Dickie et al., 2006; V. A. Dickie & Cutchin, 2013; Frank, 2013). Moreover, analysis and discussions of how a Deweyan pragmatic perspective may inform OS in the search for knowledge about the situatedness of occupation have been presented, with proposals on using Deweyan philosophy as a source for rethinking and reorienting existing concepts within OS to follow (Cutchin, 2004; Cutchin et al., 2008; Cutchin, 2013).

Researchers within OS have presented Dewey's notion of transaction as a key concept helpful in providing a foundation for a situated understanding of occupation and in the exploration of what happens when people engage (or do not engage) in occupation (R. M. Aldrich, 2008; V. Dickie et al., 2006; V. A. Dickie, 2010; V. A. Dickie & Cutchin, 2013; Frank, 2013; Holahan, 2014; Kuo, 2011; Shank & Cutchin, 2010; van Nes et al., 2012). The employment of a transactional perspective on occupation has underpinned scholars' arguments that transactionalism provides a solid foundation for rethinking and reorienting the theoretical base of OS and has led to an understanding of occupation as the relational glue holding individual and social, or individual and environment, together (R. M. Aldrich, 2008; V. A. Dickie & Cutchin, 2013). In addition, the theorizing of occupation as a situational construct, by the application of Deweyan lenses, has generated valuable contributions to reflections on occupation as a transactional phenomenon and has challenged ways of explaining occupation (R. M. Aldrich, 2008; Cutchin & Dickie, 2013b).

Upon reviewing literature within OS that has employed the Deweyan pragmatic perspectives on occupation and reviewing Dewey's notion of transaction in particular, it can be argued that these contributions have explored the relationship of occupation and situation from the perspective that occupation *is* situated. This was evidenced by a number of tendencies within the literature.

Firstly, reviewing the literature revealed a focus on occupation as a situational construction only understandable by the application of a transactional perspective. Because the idea of “transaction” is rather formless, containing no description of how transactions unfold from a processual perspective (R. M. Aldrich, 2008), it can appear problematic that the relationship of occupation and situation has mainly been explored by placing occupation under the gaze of transaction. This rather unidirectional attention to a transactional perspective may have resulted in a reduced view of occupation as a situational construction, only understandable by the application of a transactional perspective. Secondly, examination of the literature revealed an understanding of the situation from the perspective of the individual’s performance of occupation. This was reflected in the fact that a distinctive feature of the literature relates to transaction as depending on individuals’ “doing” of occupation (R. Aldrich & Laliberte Rudman, 2015; Brorsson, Öhman, Lundberg, & Nygård, 2011; V. Dickie et al., 2006; Kuo, 2011; Proding, Rudman, & Shaw, 2015) and upon limited descriptions of the person as situated, when the goal was to grasp the situation (Brorsson et al., 2011; Kuo, 2011). That is, there is a tendency to understand the situation from the perspective of the individual’s performance in an occupation. Thirdly, examining the literature revealed a tendency to use static representations of the relationship of situation and occupation, as seen in a propensity to apply mapping and sketching to depict findings relating to the situatedness of occupation (R. Aldrich & Laliberte Rudman, 2015; R. M. Aldrich, 2008; Cutchin, 2007; V. Dickie et al., 2006; V. A. Dickie, 2010; Milbourn, McNamara, & Buchanan, 2014). Thus, representations of the relationship of occupation and situation tend to be shown by static, linear, tangible illustrations with emphasis on *the* relationship of occupation and situation.

The above described tendencies may have produced a superficial emphasis on *what happens* in the relatedness of occupation and situation. Following the description of Deweyan pragmatism presented in section 3.1, these perspectives can be argued as contrary to the philosophy of pragmatism. It can further be argued that although research within occupational science has encouraged the application of pragmatism as a stand for giving explanations of the relationship of situations and occupation, emphasis on *what happens* may have created knowledge of that relationship from an oppositional perspective rather than from a processual and uniting perspective. Overall, it can be argued that a more process-oriented understanding of the relationship of occupation and situation is needed. This qualifies an exploration of perspectives on *how* situation and occupation are related.

2.5. SUMMING UP

In conclusion, the following areas of exploration are needed as a basis for obtaining an understanding of how technology can support underprivileged citizens’ use of technology for everyday health management and for engaging in a conceptualizing of underprivileged citizens’ engagement in health-related occupation.

Firstly, despite political acts from the WFOT and awareness from researchers on missing works concerning inequality in health and occupation, few studies within OS literature concern or document inequality in health. The missing research on inequality in health and related areas within OS and OT calls for an exploration of how inequality in health, high-risk areas of health and people's engagement in their own health have been described and conceptualized within contemporary OS and OT literature.

Secondly, research applying a situated approach to how citizens in underprivileged situations experience and interact with technology as part of their everyday health management is needed. However, research within OS focusing on new digital technologies as aids for engagement in occupation is limited, although this may be problematic due to the fact that digital technology is a primary tool for most citizens in the western world, and the focus on integrating digital technologies in HP programs is increasing. In particular, no research concerning underprivileged groups of citizens' use of technology in everyday life has been identified within OS. Overall, it can be asserted that a knowledge gap is present on how underprivileged citizens experiencing health challenges use technology in everyday life to engage with health.

Thirdly, given the complexity of inequality in health and the perspective that inequality in health is rooted in everyday life, the situated character of inequality in health can be argued as equally important when planning HP interventions. However, limited research addressing inequality in health from a situated perspective on everyday life and health has been identified. It is thus conceivable that a situated everyday-life, processual, problem-solving approach to the problem of inequality in health is open for exploration. This can be seen as equivalent to the need for research on the situatedness of occupation within OS. However, existing contributions within occupational science have explored the situatedness of occupation from the perspective of *what happens* in the relatedness of occupation and situation. Overall, it can be argued that a more process-oriented understanding of the relationship of occupation and situation is needed. This qualifies an exploration of a situated and processual approach to occupation from the perspective of *how* situation and occupation are related.

2.6. SPECIFIC AIMS AND RESEARCH QUESTIONS

The overall aim of this thesis is to develop conceptual knowledge on how to support underprivileged citizens' engagement in health-related occupation. Attention is placed on everyday health management by the use of technology for underprivileged citizens experiencing health challenges and living in residential areas identified as districts with health inequalities.

In light of the areas identified for exploration, this thesis has focused on three iterative connected studies contributing to the limited but needed research on underprivileged citizens' use of technology for engagement in health-related

occupation and how technology can support health promotion. Specifically, the three studies contribute with knowledge through a) a literature study of how inequality in health and related concepts have been described and conceptualized in contemporary occupational science and therapy literature, b) an empirical investigation of how underprivileged citizens experiencing health challenges use technology in everyday life to engage with health and c) a theoretical development of a processual approach to the exploration of the situatedness of occupation. The studies are addressed from the perspective of OS and are theoretically approached through the lens of Deweyan pragmatism. Table 1 presents an overview of the three research studies and the research questions, objectives, methods and materials in this thesis.

Study	Research Question	Objective	Method	Materials
I	How can health inequalities, high-risk areas of health and engagement in health be described and analyzed from an occupational science perspective?	To identify how inequality in health and high-risk areas of health and engagement in health for low-income adult citizens have been described and conceptualized in contemporary occupational science and therapy literature.	A systematic literature review	Thirty-seven publications in occupational science and therapy literature published from 2004 to 2014
II	How do adults with health and life challenges use technology in everyday health management?	To contribute with insights on how health-promotion technology can support underprivileged people in health management.	A qualitative empirical study.	Seven citizens, interviews, cultural probes, workshop, literature review

III	How can John Dewey's logic of inquiry contribute to examination of the situatedness of occupation from the perspective of <i>how</i> situation and occupation are related?	To explore a processual approach to the exploration of the situatedness of occupation.	A theoretical study.	Occupational science and inter-professional publications applying a pragmatic approach to situatedness.
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Table 1: Overview of the studies constituting the thesis.

CHAPTER 3. THEORETICAL APPROACH

In this chapter, I present the theoretical approach applied in my studies. Deweyan pragmatism is employed for the purpose of applying a problem-solving approach to how to support underprivileged citizens' engagement in health-related occupation. Dewey's theory on transaction is applied to create a relational and situational understanding of everyday life, which is supported by a processual and knowledge-oriented perspective from his theory of inquiry. OS is applied as a theoretical approach in order to frame central elements in the aim of the thesis from the perspective of occupation. A transactional perspective on occupation is further called upon as a resource for comprehending occupation as situated and contextually dependent. Finally, both Deweyan pragmatism and OS have informed the theoretical understanding of technology use applied in this thesis.

In the following sections, I will describe the basis of these theoretical approaches integrated and operationalized in the three studies presented in the thesis, along with an elaboration of how they have provided a point of departure for and have influenced the research presented. A discussion of implications for my theoretical approach and other relevant theoretical perspectives is made in section 7.2.

3.1. DEWEYAN PRAGMATISM

In this thesis, the word "pragmatism" refers to the philosophy developed by contributors such as Charles Sanders Peirce (1839–1914), William James (1842–1910) and later, John Dewey (1859–1952). Pragmatism refers to the philosophy of changeability, in the sense that it regards the world as emergent and never final (Moore, 1961; Scheffler, 2013; Thayer, 1970). Pragmatists thus regard the existence of an external world as real and as an essential premise of our existence as humans. But this external world is not fixed and stable and will never be so. It is full of possibilities, open for action unfolding in everyday life (Scheffler, 2013; Shalin, 1986). From this perspective, humans cannot rely on chosen concepts or structures as the basis for living their everyday lives, because these will always change their meaning. However, humans may, through the practical application of knowledge unfolding in everyday action, establish passing stability in given situations. As such, pragmatism views all human activity as situated, and it is in human nature to make sense of phenomena in an always emergent world in an attempt to obtain stability (J. Garrison, 2001; C. Kirby, 2005; Scheffler, 2013; Shalin, 1986). Employing the philosophy of pragmatism as a resource for my research facilitated a theoretical perspective on changeability in the sense that pragmatist philosophers regard the world as emergent and never final. Further, applying a pragmatic philosophical perspective to everyday life turned the focus onto the nature of knowing and acting as unfolded in the relation between people and the environments in which they act.

As such, the application of pragmatism as a theoretical point of departure framed what we do in everyday life and how we do it as the central point of interest (Moore, 1961; Scheffler, 2013; Thayer, 1970).

The American pragmatist philosopher whose version of pragmatism is commonly known as instrumentalism, John Dewey (1859–1952), viewed the existence of an external world as not the only essential precondition of human existence (Scheffler, 2013; Shalin, 1986). Instead, he argued that humans were continuous, internal to, inseparable from and part of the world, because of their actions (Dewey, 1938; Dewey, 1958). Dewey acquired the conception that a human being or community is like a highly complex natural organism that must function within its environment and that the pragmatic application of human knowledge and intelligence in one's interaction with his or her environment is crucial to this functioning (Magee, 1998). He thus regarded the world as a place of change and becoming through problem solving, not as a static site inhabited by discrete objects. The basic ontological entity that shaped Dewey's pragmatic attitude was consequently not "object" or "substance" but "event." Adopting Dewey's pragmatic reasoning in this thesis therefore also implies thinking of people themselves as dynamic processes, reacting to the context in complex processes, and not as actors rationally acting separate from the environment. An important element within Dewey's pragmatic reasoning is therefore that knowledge is effective action, it is doing. From this, an important point is thus that reason itself does not exist in in some transcendental realm but develops within action (Brinkmann, 2004; Dewey, 1958; C. Kirby, 2005).

Dewey viewed a situation as the context of overcoming problems in everyday life through experimental action and as basically uncertain and unstable and therefore *unfinished* (Dewey, 1958; J. Garrison, 1999; J. Garrison, 2001; C. Kirby, 2005; Magee, 1998). As such, Dewey believed that all human action is situated and that individuals change their way of acting in response to situations (Durant, 1961). Thus, Dewey (1998) simply named the set of facts or circumstances that surround human actions the "situation" and described it in the following way:

What is designated by the word situation is not a single object or event or set of events. For we never experience nor form judgements about objects and events in isolation, but only in connection with a contextual whole. This latter is what is called a situation. (pp. 66–67)

Dewey regarded situations as either indeterminate or determinate, characterized by certain challenges and needs. An indeterminate situation is "open to inquiry" in the sense that its constituents are not a coherent whole and, therefore, shape a problematic nature. By contrast, a determinate situation is a closed and unproblematic situation. As such, Dewey believed that human life is to be seen prospectively—it is all about bringing stability and form to its incompleteness. Dewey was therefore mainly concerned with processes used to create stability in life rather than studying the causal powers of separate entities disconnected from life as a whole (Brinkmann, 2011; Dewey, 2004). Dewey further believed in a human need

to constantly test and alter one's perception of the truth through "inquiry." Dewey thus stated that human awareness and action occur as identical elements within a coherent experience—what we know is what we do (Bentley & Dewey, 1949). Consequently, Dewey stated that humans continuously change in response to their current situation, meaning that life requires great skill because of its "aleatory character," prompting experimental action as a way of overcoming any problem in everyday life (Dewey, 1958; J. Garrison, 1999; J. Garrison, 2001; C. Kirby, 2005; Magee, 1998).

From Dewey's pragmatic approach to human action, a situation in this thesis is defined as: A dynamic and unfinished feeding source for experimental actions toward stability (Madsen & Josephsson, 2017). Applying the pragmatic action theories of John Dewey to this thesis provides a theoretical basic understanding of actions in everyday life, as what we do as purposive organisms, in the larger context of a doubtful, uncertain and changeable situation. In this thesis, a pragmatic and thus problem-solving approach to everyday life creates the point of departure that the knowledge behind and derived from human action is what makes up how real-life problems are understood, resolved and acted upon in everyday life (Bentley & Dewey, 1949; Dewey, 1938; Dewey, 1958).

3.2. THE THEORY OF TRANSACTION

Dewey emphasized the term "transactional" to describe his theories of knowledge and experience (Bentley & Dewey, 1949). According to Dewey and Bentley (1949), transaction develops and widens the phases of knowledge and broadens the system within the limits of observation and report; transaction assumes no prior knowledge of either the organism or environment alone as adequate, but it requires their primary acceptance in a common system (Bentley & Dewey, 1949). A transactional perspective of human action (and therefore of the use of technology) forms the viewpoint applied in this thesis that no constituents can be specified apart from the specification of all other constituents and that no prior knowledge of the individual or environment alone and apart is adequate. The concepts of functional coordination, habit, context and end-in-view were described by Dewey as central components of the complex character of transaction, thus to be understood as essential elements, when observing human action as a situationally dependent, dynamic and constantly developing phenomenon.

Functional coordination is the process by which the individual and the context co-constitute one another through their mutual relationship (R. M. Aldrich, 2008). The aim of this process is to maintain, enhance and obtain an overall harmonic functioning within indeterminate or determinate situations. It is thus through such functional processing that people "occupy" their everyday lives. Overall, functional coordination was described by Dewey as a constantly active process dependent on the relationship of constructs formed and defined by situations (C. Kirby, 2005)

Habits form and dominate transactions on a subconscious level and nurture a basic functional coordination of the inseparable person-context relationship. Habits continuously exist and work as predispositions to modes of response, becoming specific when applied in everyday life situations. When habits are nonconductive to functional coordination, however, they change, meaning that habits are inseparable from context in both their form and manner of acquisition and change (Dewey, 1958; J. Garrison, 1999; J. W. Garrison, 2002).

Context is described by Dewey as a spatial and temporal background affecting all thinking and thus action (Dewey & Bernstein, 1960). Hence, it is to be seen as an overall condition affecting functional coordination. Objective conditions of context such as physical and social constraints or opportunities for education or employment influence the development and enactment of habits by shaping the situations in which habits function. The shaping and acquiring of habits is therefore facilitated by the demand for reconfiguration of habits by the context and through experience in context. Overall, context thus serves as a key factor in the creation and maintenance of transaction (Dewey, 1998; Kestenbaum, 1977).

The end-in-view is the force that drives transaction through the support of habit and context. Ends-in-view are described by Dewey as forever incomplete and constantly developing manifestations, representing the aim as transaction. Opposite to having a goal, ends-in-view represent a basic drive toward functionally coordinated relationships. While goals characterize human action as a linear process with a definite end, the end-in-view forms the perspective that a person-context relationship exists before and throughout a transaction. This creates the notion that action is based on a complex interplay of habit and context, with the aim of functional coordination (J. Garrison, 1999; J. Garrison, 2001).

According to Dewey and Bentley (1949), action is constantly transactional. Hence, transactions may then be seen as a procedure and frame of observing activities of humans, to present their perceptions and manipulations. This approach allows a full descriptive and functional treatment of human action, with attribution to all important elements, entities, essences or realities without isolating presumptively detachable relations from each other (Bentley & Dewey, 1949). Thus, applying a transactional perspective to observe human action (and, through that, the use of technology) forms the viewpoint applied in this thesis that no constituents can be observed and specified apart from the specification of all other constituents and that no pre-knowledge of individual or environment alone and apart is adequate. However, Dewey and Bentley further argued that regarding transaction not as a theory but as a method allowing situational observation and description of action as always preliminary forms the possibility of focusing on aspects and phases of perceptions, manipulations and thereby actions as generated through *inquiry* at any time. Thus, from a processual and observable point of view, *transaction is inquiry*.

Overall, Dewey's transactional theory provides my research with a relational and situational understanding of everyday life and serves to provide an understanding of

human action as emerging from the inseparable relationship among humans, materials and immaterial aspects (R. M. Aldrich, 2008; Cutchin, 2004; V. Dickie et al., 2006).

3.3. THE THEORY ON INQUIRY

Dewey's theory on inquiry is about how to investigate, improve and stabilize problematic situations through a transactional process (Dewey, 1938; C. Kirby, 2005). Basically, transaction was unfolded by Dewey and Bentley (1949) as an "inquiry in which existing descriptions of events are accepted only as tentative and preliminary, and where new descriptions of the aspects and phases of events based on inquiry may be made at any time" (Bentley & Dewey, 1949). Overall, Dewey (1938) viewed inquiry as a process of stabilizing an aleatory world, and he defined this process in this way:

Inquiry is the controlled or directed transformation of an indeterminate situation in one that is so determinate in its constituent distinctions and relations as to convert the elements of the original situation into a unified whole. (p. 108)

Dewey described inquiry as functioning as a controlled transformation of the indeterminate into determinate, turning the situation into a unified contextual whole (Dewey, 1938). Inquiry is thus to be understood as a mode of thinking and acting by which humans approach indeterminate situations in order to transform them into determinate (Dewey, 1938; Dewey, 1998). As such, Dewey viewed the situation and inquiry as inseparable and described how situations comprise an interconnected functional relation, merging individuals and environment through inquiry. The uncertain and continuously changing character of situations thus generates and shapes an always developing inquiring point of departure for human action (Cutchin & Dickie, 2012; Dewey, 1998; J. Garrison, 1999).

Following Dewey's line of reasoning, and as applied in this thesis, everyday health management can in this manner be seen as dependent on the mode of thinking and acting performed by people in their attempt to transform indeterminate situations of health into determinate situations of health. Applying Dewey's theory on inquiry to this thesis further provides a perspective on everyday life as having an aleatory character, expressed by people constantly being in an experimental process of seeking the stabilization of indeterminate situations, which provides knowledge of "what is to be done." Overall, this thesis is thus based on the theoretical perspective that humans' foundation for realizing and handling situations of either a problematic or nonproblematic character is dependent on their capacity to gain knowledge of how to do this from action (Bentley & Dewey, 1949; Dewey, 1938; Dewey, 1958).

3.4. OCCUPATIONAL SCIENCE

As a discipline, OS is concerned with studies of the purpose, meaning and complexity of the interactive relationships between people, what we do, where we do it and how we do it. In this thesis, OS is regarded as a science of everyday living, unfolded through studies of occupation (Wilcock, 2006; Wilcock, 2005). As a basis for implementing knowledge from OS to the studies presented in this thesis, occupation is defined overall as engagement or participation in a recognizable everyday life endeavor (C. Christiansen & Townsend, 2010; Wilcock, 2006) and is defined in detail as actions which...

...people do to occupy life for intended purposes such as paid work, unpaid work, personal-care, care of others, leisure, recreation, or subsistence. Including groups of activities and tasks of everyday life, named, organized, and given value and meaning by individuals and a culture. (C. Christiansen & Townsend, 2010)

Engaging in occupation is defined as “full participation in occupations for the purpose of doing what one needs and wants to do, being, becoming who one desires to be, and belonging through shared occupations in communities” (C. Christiansen & Townsend, 2010). In relation to this, the definition of participation in occupation as taking part in and becoming involved in everyday occupations, which implies experiencing through making choices, taking risks and seeking meaning (Law, 2002), is applied in this thesis.

By taking an OS perspective on managing health in everyday life, another fundamental viewpoint in this thesis is that engagement in occupation is a core foundation for health; hence, I focus on health-related occupations in this thesis. This is based on the assumption that anything which influences a person's ability to engage in occupation in everyday life has the potential to positively or negatively impact the health of the individual and that the health impact of engaging in occupation depends on the personal, social and environmental context within which it takes place and is performed (K. R. W. Hammell & Iwama, 2012; K. W. Hammell, 2008; Kiepek & Magalhães, 2011; Moll et al., 2013; Pettican & Bryant, 2007; Watters, Pearce, Backman, & Suto, 2013; Wright-St Clair, 2012).

Applying the above described Deweyan pragmatic approach to occupation creates the impression that knowledge of human occupation is to be found in a merged and process-based understanding of situations and how humans experience, gain knowledge and solve problems from their engagement in occupation in those situations (Bentley & Dewey, 1949; Cutchin et al., 2008; Dewey, 1958; Dewey, 2013; C. Kirby, 2005). Applying a pragmatic perspective on occupation in this thesis thus creates the viewpoint that the knowledge behind and derived from human action is what makes up engagement in health-related occupations in everyday life.

Overall, in this thesis, employing OS as a resource creates the theoretical understanding that management of everyday health emerges and unfolds through humans' engagement and participation in occupation (C. Christiansen, 2005; C. Christiansen & Townsend, 2010; Wilcock, 2006) and that the shift from one occupation to another happens within a continuous flow (Kuo, 2011). The application of OS to my research has further provided a theoretical frame for viewing central elements in the aim of the thesis, from the perspective of occupation performed by the individual. Finally, OS serves as a resource for classifying and explaining everyday life occupations into a foreseeable lot, usable in both the collection of empirical data and in the analysis of these.

3.5. A TRANSACTIONAL PERSPECTIVE ON OCCUPATION

Inspired by Dewey's theory on transaction, a transactional perspective on occupation emphasizes the relation between person and environment and the fact that meaning is constantly negotiated and reproduced through their interwovenness (R. M. Aldrich, 2008; Cutchin & Dickie, 2012; V. Dickie et al., 2006). From this perspective, engagement in occupation is therefore not chosen and performed only because of a person's individual value, but it is also context-dependent (Lee Bunting, 2016; Reed, Hocking, & Smythe, 2010). Occupation is thus regarded not as self-action or interaction but as a transaction which brings together person and situation. Having a transactional perspective on occupation, situations of engagement in occupation become the main focus, because they make humans part of other worlds and socially connected to others (Cutchin, 2007; Cutchin & Dickie, 2012). Overall, a transactional perspective on occupation is called upon in this thesis to facilitate a relational and integrated understanding of everyday life from the perspective of occupation, and it provides a theoretical position of understanding occupation from a context- and situation-dependent perspective. A transactional perspective on occupation further allows a situated perspective on central concepts in the thesis.

3.6. TECHNOLOGY

The concepts of technology have been explored and defined from different scientific perspectives (Arthur, 2009; Tenner & Rall, 1997). For example, there is within social science a common understanding of technology as what Bain (1937) defined as including "all tools, machines, utensils, weapons, instruments, housing, clothing, communicating and transporting devices and the skills by which we produce and use them" (p. 860). However, scientists also prefer to define technology not only as artefacts made and used by people but also as the application of knowledge or a collection of techniques (Arthur, 2009; MacKenzie & Wajcman, 1999). In this thesis, inspired by a problem-solving approach, I employ the broad understanding of technology as material entities, such as tools and machines, created and applied in order to solve real-world problems, fulfill needs and achieve value in life (Arthur, 2009; Bain, 1937). From this perspective, "health technology" and HPT refer to tools and machines developed within health-related professions for the purpose of

solving problems, fulfilling needs and creating value in a health-related perspective. However, it should still be mentioned that the number of different health-related technologies has grown until it is extensive (e.g., telemedicine, telehealth, ehealth and mhealth). Consequently, the understandings and definitions of such technologies are varied.

Dewey viewed technology as essential to a transactional process and thus to human practice and development through time. He defined technology as the use of instruments or means to reach an intended outcome. This is seen in Dewey's (1958) conception of technology: "By its nature technology is concerned with things and acts in their instrumentalities, not their immediacies" (p. 121). Dewey further emphasized that technologies need to be analyzed and understood not only from how people use them, but in multiple relations between people and context. Dewey (1958) therefore specified that:

Man's bias toward himself easily leads him to think of a tool solely in relation to himself, to his hand and eyes, but its primary relationship is toward other external things, as the hammer to the nail, and the plow to the soil. (p. 123)

Dewey thus understood technology as essential to and supportive of the transactional process of transforming situations from indeterminate into determinate through inquiry. Because of this inclusive perspective on technology, he considered technology to be both constitutive of experience and at the same time altering experience (Dalsgaard, 2014).

Within OS there is a broad acceptance that technological devices of different kinds can support the relationship between person, environment and occupation and can thus enhance engagement in occupation (Ivanoff et al., 2006; Malinowsky et al., 2010; Nygård & Starkhammar, 2007; Schaper & Pervan, 2009). However, researchers within OS have recently begun applying the concept of *everyday technology* to describe the connection between human occupation and technology, which can be characterized by specifically focusing on electronic, technical, and mechanical artefacts that exist in people's everyday lives at home as well as in the community. This perspective comprises both newly developed digital technology as well as familiar household technology, such as a stove or a blender, used or designed to be used habitually on a daily basis or, more seldom, in the context of people's everyday lives (Engström et al., 2010; Malinowsky et al., 2010; Nygård & Starkhammar, 2007).

Dewey's theorizing of the human use of technology is in many ways embedded within perspectives on the relationship of technology and occupation. Both conceptualize technology as situated in history, context and human use. Yet although a growing focus on everyday technology is emerging, few attempts to theorize technology from an OS perspective have been identified in the writing of this thesis. As examples of OS perspectives on technology, the Model of Human

Occupation describes technology artefacts and objects as naturally occurring or fabricated things, with specific properties, used by people for interaction and influencing their lives (Kielhofner, 1995; Kielhofner, 2008). Further, Wilcock (1996), in her comprehensive work on the development of human occupation through time, described how human occupation and technology have developed side by side throughout history, due to a human need of survival and thus a continuous innovation of living. As such, technological experimentation and development are a key characteristic of human occupational nature. Wilcock further emphasized that humans bear a “genetic constitution” that creates a drive for explorative and productive behavior in which technology is a vital tool. Hence, changes in technological tools throughout history reflect changes that have affected a human way of living in general, and vice versa. Wilcock also describes how the relationship of occupation and technology can be expressed in various ways, depending on the culture in which the technology is used. Thus, no matter which culture (or group of humans) uses technology, it can be described from an OS perspective as a specific and situated aspect of the context, important for human engagement in occupation.

However, although technology in many ways is regarded as a tool helpful in completing actions in everyday life, the use of technology can also be negative. Kielhofner (1995, 2008) describes how the properties of a technical artifact influence how it is used by people and thus influence our engagement in occupation. Therefore, technology may also hinder or negatively influence people’s engagement in occupation if not used properly or if the technology is not designed for or adapted to people’s needs and way of living. In particular, researchers point to the fact that many technological devices, services or systems require the users to respond in specific ways (for example, understanding and interacting with a mobile phone) for accurate use. However, people suffering from certain health conditions may be challenged by this and thus may experience a lack of possibility for engagement in occupation in everyday life (Engström et al., 2010; Malinowsky et al., 2010; Nygård & Starkhammar, 2007; Rosenberg, Kottorp, Winblad, & Nygård, 2009). In line with this, Hasselkus (2011) emphasizes that technologies of various kinds, such as televisions and computers, through time have facilitated engagement in occupations characterized by a lower “connectedness” to our social world. Hasselkus thus problematizes occupations that have increased parallel to the technological development involving little or even no human interaction.

Overall, inspired by the above described perspectives, this thesis is founded on a theoretical understanding of technology as artefacts, situated in history and context, used by people in their engagement in occupation to solve problems, fulfill needs and achieve value in their everyday life. Yet technologies of various kinds may also hinder or negatively influence people’s engagement in occupation and thus may affect their health.

3.7. OVERVIEW OF THEORETICAL APPROACH

Overall, as illustrated in Figure 2, which presents an overview of theoretical resources applied in this thesis, Deweyan pragmatism and OS have formed the theoretical basis of my research. Upon this basis, Dewey's theories on transaction and inquiry as well as a transactional perspective on occupation were employed as theoretical resources in the three iterative connected studies forming the basis of this thesis.

In Study I, the employed theoretical understanding of occupation served as a point of departure for understanding how health inequalities, high-risk areas of health and one's engagement in one's own health can be described and analyzed from an OS perspective. Further, in Study I, I indirectly applied Dewey's theory on transaction for the purpose of discussing a transactional perspective on inequality in health. In relation to this, a transactional perspective of occupation was brought into play for the purpose of illuminating the theoretical possibility of occupation and inequality in health as entangled and co-constructed.

In Study II, the OS approach employed in this thesis influenced the conceptualization of everyday life applied in the study. Further, in Study II, the theories of transaction, and more precisely the components of functional coordination, habit, context and end-in-view as well as the theory of inquiry constituted the analytical lens for the empirical data. Thus, Deweyan pragmatism functioned as a theoretical approach and was chosen in recognition of the need for a problem-oriented approach for understanding underprivileged citizens' use of technology as part of their everyday health management. An OS perspective on technology as supporting the relationship between person, environment and occupation were applied, particularly in the planning of gathering empirical data in Study II, while Dewey's conception of technology as neither neutral nor final formed the analytical approach that the use of technology for managing everyday health should be analyzed in a multiple relational perspective.

In Study III, OS and a transactional perspective of occupation were employed as a point of departure for exploring a processual approach to the exploration of the situatedness of occupation. Deweyan pragmatism and Dewey's theories on transaction and inquiry were applied in seeking an answer to how his logic of inquiry can contribute to the examination of the situatedness of occupation from the perspective of how situation and occupation are related.

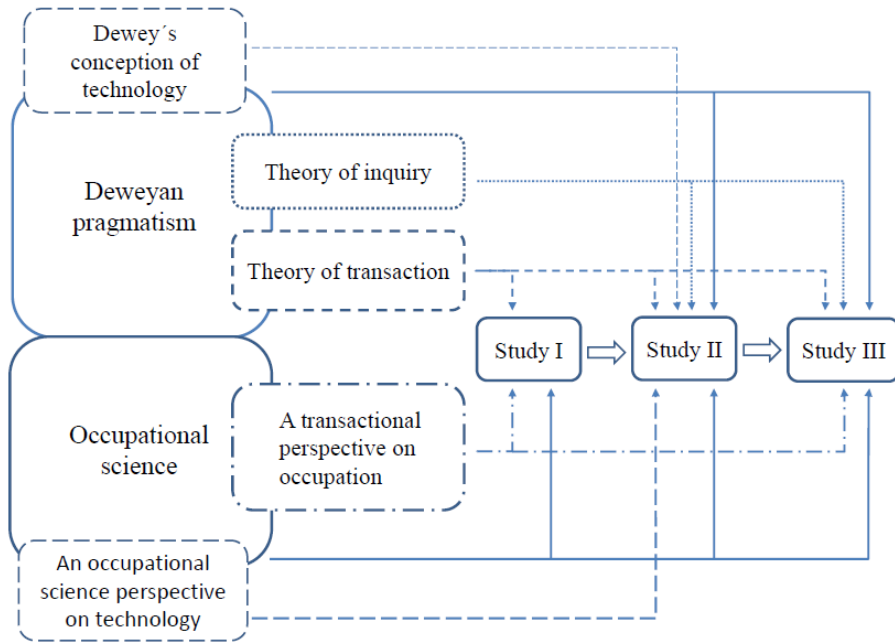


Figure 2: Overview of theoretical resources applied in the thesis.

CHAPTER 4. STUDY I

The aim of this study was to identify how inequality in health, high-risk areas of health and engagement in health for low-income adult citizens has been described and conceptualized in contemporary occupational science and therapy literature. From this aim, the following research question was developed:

RQ 1: How can health inequalities, high-risk areas of health and engagement in health be described and analyzed from an occupational science perspective?

4.1. METHOD

To achieve the objective of Study I, the matrix method developed by Judith Garrard was chosen as a methodological approach. The matrix method is described as a structure and procedural framework for providing an overview of significant amounts of literature and information spread across various sources. As such, the method encompasses procedures to systematically identify, describe and analyze state-of-the-art literature (Garrard, 2014; Goldman & Schmalz, 2004).

Following recommendations made by Garrard (2014), an initial search of literature was performed to identify terminology used by different disciplines and in different countries. This search provided an overview of the most commonly used concepts in relation to the objective of the study. An initial search of the literature identified terminology relevant for the review used by different disciplines and in different countries. For instance, *health disparities* is often used in studies in the United States, whereas *health inequalities* and *health inequities* are more frequently used in European literature. Related terminology, such as *health literacy*, *socioeconomic status (SES)* and *social capital*, were also used in relevant literature. The initial search for high-risk areas of health and engagement in health likewise showed diverse terminology.

The review targeted publications within OS and OT from 2004 to 2014. Full-length research papers in English on empirical studies, applying qualitative and quantitative research methods and published in peer-reviewed scientific journals and reports, were included in the review along with official documents, overviews, editorials, theoretical manuscripts, comments and nonpeer-reviewed literature such as theses and textbooks. No exclusion criteria were set up due to the aim of the study.

4.1.1. SEARCH AND REVIEW PROCESS

The following databases were searched for the period 2004–2014: PubMed, Medline, CINAHL, Allied & Complementary Database (AMED), OT-seeker and Science Direct. Google Scholar was searched for more literature in general. A block search, bringing together relevant search terms combined with AND (AND) and OR

(OR) was conducted in the selected databases. To narrow the search, head terms identified in the initial search for literature were combined with specific keywords, resulting in the following search combination: *inequality in health* OR *health inequities* OR *health disparity* OR *health disparities* OR *social inequality in health* OR *social determinants of health* OR *socioeconomic status* OR *health literacy* OR *social gradient* AND *high-risk areas of health* OR *underprivileged residential areas* OR *low-income communities* OR *vulnerable citizens* OR *underserved citizens* OR *marginalized groups* AND *engagement* OR *motivation* OR *involvement* OR *commitment* OR *empowerment*. All were combined with *occupational science* OR *occupational therapy*.

As illustrated in the literature selection process (Figure 3), interesting titles were selected from the literature search, and literature matching the inclusion criteria was identified, followed by an abstract analysis. A further exclusion was created based on the abstract analysis, and publications for full-text analysis were identified and retrieved. During this step, publications that used words close to the head terms and specific keywords, such as *health inequalities*, *social inequality* and *low-income families*, were included, based on the first author's own valuation of relatedness. Key publications were then identified, carefully read and abstracted chronologically.

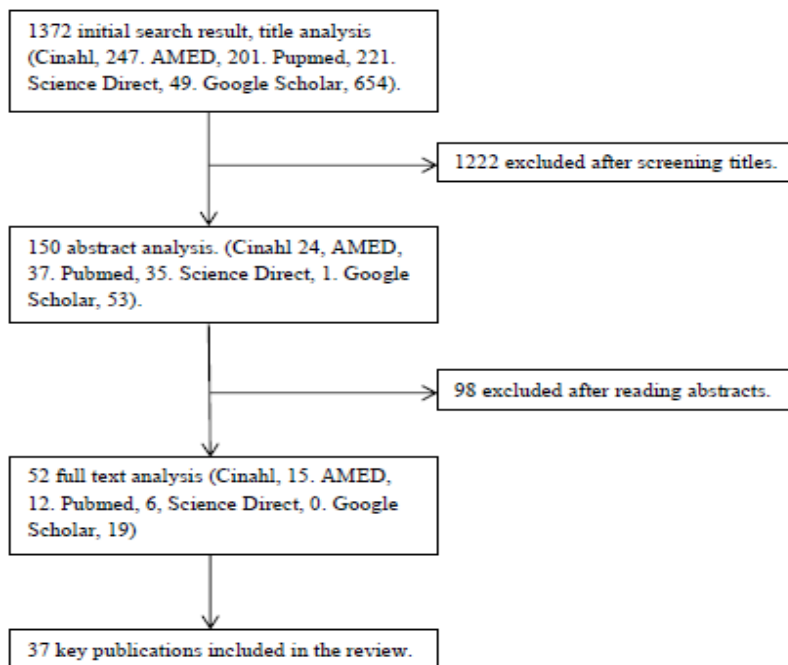


Figure 3: Selection process of literature in Study I.

Overall, 37 key publications in occupational science and therapy literature, published from 2004 to 2014, were identified and included in the study after the thorough search process. Out of these 37 publications, there were 27 articles, 8 chapters in textbooks, 1 full textbook and 1 official document.

In line with the matrix method (Garrard, 2014), the identified publications within OS and OT were analyzed and synthesized by following a two-step procedure. Initially, a matrix was produced to organize the reviewing process and the administration of a critical analysis and synthesis. Further, the matrix was applied to systematize the appearance of head terms, specific keywords and/or words closely related to these and to systematize descriptions and conceptualizations of issues relevant to the study. Additional information on the included literature was written into the matrix and applied when comparing this literature. An in-depth abstraction on the method, the use of particular theory and the inclusion of participants was not coded into the matrix. The applied coding was used to create an overview of the development of the appearance and use of descriptions and conceptualizations relevant to the study over the years. This likewise provided the opportunity to find similarities, differences and gaps in both the content and the applied research methodology of the included literature (Garrard, 2014).

As illustrated in Appendix A, which shows the identified literature listed in a matrix, the appearance of head terms, specific keywords and words in close relation to these in each publication was identified and registered. Further, a categorization of types was made in line with the matrix method (Garrard, 2014). The included literature was coded as either primary source material (PSM; i.e., original research papers written by the scientist who conducted the study), secondary source material (SSM; i.e., papers or other documents which summarize the original work of others, based on information from primary source material), or tertiary source material (TSM; i.e., a systematic analysis or critical review of scientific papers).

All key publications were organized, reviewed and critically analyzed into a logical, coherent whole. I secondly made a synthesis of the included literature as well as an abstraction intended to unify entities in the descriptions and conceptualizations of inequality in health, high-risk areas of health and engagement in health. As a means of increasing the study's trustworthiness, in-depth discussions on the analytical comparison between the included literature and the result of the first analysis were held with my supervisors and co-authors during the process.

4.2. RESULTS

As shown in Appendix A (Identified literature matrix), the initial analysis revealed that all literature included in the review study was related either to occupational science or to occupational therapy. Twenty-four out of the 36 included publications addressed the category of *inequality in health*, 17 of the publications addressed the category of *high-risk areas of health* and 35 of the 36 publications addressed the

category of *engagement*. Most of the included literature was conceptual in nature, while fewer documents reported empirical results, all from qualitative studies. This was made clear when 9 articles were identified as PSM, 17 articles, 9 textbooks and 1 official document were identified as SSM and 1 article was identified as TSM. The majority of the included literature came from Canada or the United States, and most was published after 2009, with the most productive years being 2012 and 2013.

In the subsequent in-depth analysis, synthesis and abstraction of the included literature, the following five themes were identified: missing attention to inequality in health, existing concepts as a foundation for comprehension, factors affecting inequality in health, characteristics of high-risk areas of health and factors related to individuals' engagement in health. The following sections will unfold characteristics of the identified themes and thus give a description and conceptualization of how health inequalities, high-risk areas of health and engagement in health can be described and analyzed from an OS perspective.

4.2.1. MISSING ATTENTION TO INEQUALITY IN HEALTH

The review identified the fact that the theme of inequality in health and related issues has mainly been dealt with in position papers and author statements. This literature was particularly characterized by an emphasis on the need for and importance of OT contributing as a health profession in solving inequality in health. This became clear as only five works out of the identified literature were PSM. In addition, high-risk areas of health were identified as almost unexamined from an occupational perspective, since none of the identified literature concerned this area in particular. However, 40.5% of the included literature concerned marginalized groups; only two articles within this category were PSM. In contrast, 94.6% of the identified literature concerned engagement, out of which seven articles were PSM. Overall, the review of literature showed that attention to inequality in health within OS and OT is lacking. This was concluded from the identified lack of PSM on inequality in health.

4.2.2. EXISTING CONCEPTS AS FOUNDATION FOR COMPREHENSION

A further synthesis and abstraction of the literature showed that existing concepts within OS and OT were applied as a basis for comprehending inequality in health, high-risk areas of health and engagement in health. However, one work did conceptualize inequality in health by renaming it *occupational inequities* (Laliberte Rudman, 2013). The following concepts were found to be used to describe either the reason for or the result of inequality in health, high-risk areas of health and engagement in health: *occupational justice* (K. W. Hammell, 2008; Nilsson & Townsend, 2010; Stadnyk, Townsend, & Wilcock, 2014; Townsend & Wilcock, 2004); *occupational marginalization* (Bass-Haugen, 2009; B. Braveman & Bass-Haugen, 2009; Hammell Whalley, 2013; K. W. Hammell, 2008; Jarman, 2014; Lysack & Adamo, 2013; Nilsson & Townsend, 2010; Stadnyk et al., 2014; Townsend & Wilcock, 2004; Townsend et al., 2009; Wilcock, 2006); *occupational*

deprivation (Jarman, 2014; Pettican & Bryant, 2007; Stadnyk et al., 2014; Townsend & Wilcock, 2004; Wilcock, 2006); *occupational alienation* (Jarman, 2014; Pettican & Bryant, 2007; Stadnyk et al., 2014; Townsend & Wilcock, 2004; Wilcock, 2006); *occupational imbalance* (Pettican & Bryant, 2007; Stadnyk et al., 2014; Townsend & Wilcock, 2004); *occupational choice* (Galvaan, 2012; K. W. Hammell, 2008; Laliberte Rudman, 2013; D. L. Smith & Gutman, 2011); *occupational possibilities* (Bass-Haugen, Henderson, Larson, & Matuska, 2004; Lysack & Adamo, 2013; Townsend et al., 2009); and *occupational engagement* (Bass-Haugen, 2009; Galvaan, 2012; Lin, Kirsh, Polatajko, & Seto, 2009; Lysack & Adamo, 2013).

4.2.3. FACTORS AFFECTING INEQUALITY IN HEALTH

The analysis further revealed that the identified literature described various factors affecting inequality in health. These factors were additionally described as affecting the citizens' ability to use their resources to control and improve their own lives, and by that, also affecting their ability to participate in society and engage in occupations in attempts to achieve personal goals and life potential, which are prerequisites for a general health status (Bass-Haugen et al., 2004; Bass-Haugen, 2009; Galvaan, 2012; K. W. Hammell, 2008; Laliberte Rudman, 2013; Levasseur & Carrier, 2012; Lysack & Adamo, 2013; D. Smith Lynn, Hedrick, Earhart, Galloway, & Arndt, 2010; Townsend et al., 2009).

First, citizens' *socioeconomic status* was described as setting boundaries for doing desirable and meaningful occupations in everyday life (Bass-Haugen, 2009; Hocking, 2012; Lysack & Adamo, 2013). Secondly, *personal values, characteristics, responsibility and costs* were described as shaping unequal and limited possibilities for choosing and participating in occupations (Bass-Haugen et al., 2004; Bass-Haugen, 2009; Galvaan, 2012; Hammell Whalley, 2013; Hocking, 2012; Hocking, 2013; Kiepek & Magalhães, 2011; Lysack & Adamo, 2013; Wilcock, 2006). Thirdly, a *hierarchical classification of occupation*, created by the valuation and idealization of occupations and associated normative demands, was described as a factor leading to a social class structure between "the haves and the have-nots" (Jarman, 2014; Laliberte Rudman, 2013; Stadnyk et al., 2014). Fourthly, *hereditary of ways of doing occupation* that have thrived throughout history were described as influencing factors (Hocking, 2009; Wilcock, 2006). Finally, and in particular, institutional, physical and social environments were described as important factors (Hammell Whalley, 2013; Lysack & Adamo, 2013; Townsend et al., 2009).

Institutional environments, characterized by health policies and programs, were described as aids to people to do occupations such as consulting a doctor, getting health advice and securing the healthy development of their children. In relation to this, a lack of support by schools, neighborhoods and communities was described as making citizens feel unsafe in doing occupations in their everyday environments (Bass-Haugen, 2009; Hocking, 2013; Lysack & Adamo, 2013). Specifically, a

divergence between the culture of doing, within both health care practices and certain groups of citizens, was described as an influential institutional cause (Gerlach, 2012; Hammell Whalley, 2013; K. W. Hammell, 2008; Jull & Giles, 2012). *Physical environments*, such as housing, communal recreation structures as well as poor quality, overcrowded and unsafe neighborhoods, were described as affecting citizens' possibilities of performing physical and social occupations (Galvaan, 2012; Hammell Whalley, 2013; Hocking, 2012; Lysack & Adamo, 2013). Likewise, *social relations* within certain environments were described as factors. In particular, entrenched social positioning, created by social structures between citizens, was described as creating unequal access to opportunities, power and resources for those in different social positions (Hammell Whalley, 2013; Laliberte Rudman, 2013).

Overall, inequality in health was described and conceptualized as occurring both when individuals' and groups of citizens' possibility for choosing and participating in occupation are differentially and unequally shaped and when conditions required to enact occupation are limited and obscured.

4.2.4. CHARACTERISTICS OF HIGH-RISK AREAS OF HEALTH

The analysis showed that the identified literature described different characteristics in relation to high-risk areas of health. Firstly, a *lack of supportiveness and safety* in schools, neighborhoods and communities along with living in inner cities, in overcrowded housing or near industrial areas as well as exposure to unsafe levels of environmental pollutants were described as important influences (Bass-Haugen, 2009; B. Braveman & Bass-Haugen, 2009; Hocking, 2012; Lysack & Adamo, 2013; Townsend et al., 2009). Secondly, areas containing *poor built environments and low access* were described as influencing or restricting factors. These factors were described in terms of making it difficult for children to find spaces to play and for older adults or adults with disabilities to find walkable environments in which to exercise and socialize; these factors also have an unequal or even discriminatory effect on the possibility of people with disabilities choosing and participating in occupations (Hammell Whalley, 2013; Lysack & Adamo, 2013). Thirdly, *inequitable access to transport and difficult access to public spaces* were described as influencing or restricting factors (Bass-Haugen, 2009; K. W. Hammell, 2008; Lysack & Adamo, 2013). Finally, areas where "high-risk" occupation is considered normal or "something you do," influenced by *sociocultural norms*, were described as influencing or restricting factors. These were further described as creating a vulnerable foundation for citizens' health through fulfilling a social role in occupations (Galvaan, 2012; Hammell Whalley, 2013; K. W. Hammell, 2008; Jarman, 2014; Kiepek & Magalhães, 2011; Reed et al., 2010).

Overall, the analysis showed that high-risk areas of health have been described and conceptualized as areas that negatively influence or restrict the possibility for individuals or groups to choose and participate in occupations.

4.2.5. FACTORS RELATED TO INDIVIDUALS' ENGAGEMENT IN HEALTH

The analysis of the identified literature revealed the general assumption that occupation serves a purpose and may be meaningful in different ways to various individuals. This was described as depending on occupation help the individual achieve and feel a sense of presence, balance, structure, personal development or positive self-esteem (Håkansson, Dahlin-Ivanoff, & Sonn, 2006; Jarman, 2014; Kiepek & Magalhães, 2011; Lin et al., 2009; Pettican & Bryant, 2007; Reid, 2005; Reid, 2008). In connection with this, different related factors were identified that influence groups' or individuals' decisions to engage and participate in occupations that influence their health in different ways.

First, the literature described how engaging in occupation depends on *personal expectations and prior experience of occupations*, because experiences consist of temporal orientations linking the past to the present and the present to the future. Therefore, experiences influence engagement in occupations, and habits and contexts work as a foundation for anticipated and future actions. The analysis also revealed that experience derived from engaging in occupation was described as facilitated by the amount of attention given to the performance of the occupation and that experience can be formed by doing occupations if engagement to elicit the experience is consciously planned (Galvaan, 2012; Kuo, 2011).

Second, the identified literature described how engagement in *self-chosen occupation* can be associated with negative consequences influencing health in different ways (K. R. W. Hammell & Iwama, 2012; K. W. Hammell, 2008; Kiepek & Magalhães, 2011). For example, engaging in occupations such as addictions and impulse-control disorders was described as associated with possible health risks, while the "overdoing of occupation" (people can get too engaged in occupation) may result in an occupational overload, causing imbalance between a person's engagement in occupations and personal resources and capabilities (Håkansson et al., 2006; Kiepek & Magalhães, 2011; Lin et al., 2009; Moll et al., 2013).

Third, the analysis showed that engaging in occupation depends on the *personal and social context* within which the occupation is embedded, forming the perspective that the context and the person's decisions to engage and participate in occupations are co-constructions (Cutchin & Dickie, 2012; Galvaan, 2012; Lysack & Adamo, 2013; Moll et al., 2013). In the literature, environment was described as providing a context for a person's engagement in occupation and thus influencing the individual's health. This was characterized by descriptions of program policies, finances and stigma as affecting people's choice to engage and participate in occupations, based on the desire to comply with rules and conditions set by the society (K. R. W. Hammell & Iwama, 2012; Laliberte Rudman, 2013; Lin et al., 2009; Townsend et al., 2009). Finally, engagement in occupation was described as influenced by prerequisite *determinants that empower or disempower* groups or individuals, such as policies, laws, economic practices and cultural forces (Bass-

Haugen, 2009; Cutchin & Dickie, 2012; Galvaan, 2012; Jarman, 2014; Lin et al., 2009; Lysack & Adamo, 2013; Townsend & Wilcock, 2004; Wilcock, 2006).

Overall, the analysis showed that engagement in health has been described and conceptualized as groups' or individuals' decisions to do and participate in occupations that in different ways influence the individuals' health.

4.3. DISCUSSION OF RESULTS

Study I showed that the emphasis within contemporary OS and OT literature has mainly been on arguing for the need to focus on inequality in health and related issues, whereas empirical research applying an OS perspective on inequality in health is lacking. Despite this, the study did provide findings on how health inequalities, high-risk areas of health and engagement in health can be described and analyzed from an OS perspective. These findings indicate that inequality in health within an OS perspective contains a contextual aspect of occupation. This became clear through arguments on environmental, social, cultural, historical and personal aspects of occupation influencing inequality in health. Overall, these arguments thus showed how occupation and inequality in health are assumed to be related within contemporary OS and OT literature.

The literature reviews revealed a focus within the literature on the unequal, limited and obscured possibility of enacting occupation as a key factor in the assumed relationship between occupation and inequality in health. This can be argued as correlating closely with the WHO's description of the social determinants of health as a main concern in relation to inequality in health (World Health Organization, 2012). The same type of description on a somewhat general level can also be argued as identified in descriptions of high-risk areas of health, in the light of the OS assumption that the health impact of doing occupation depends on the environmental context in which it is performed (K. R. W. Hammell & Iwama, 2012; K. W. Hammell, 2008; Kiepek & Magalhães, 2011; Moll et al., 2013; Pettican & Bryant, 2007; Watters et al., 2013; Wright-St Clair, 2012). Finally, the description and conceptualization of engagement in health also appeared to be closely related to general descriptions within the HP literature concerning issues on the development of personal skills to engage with health (Acton & Malathum, 2000; Jackson et al., 2006) as a way to avoid health literacy (Nutbeam, 2000). The comparison within the identified OS and OT literature between occupation and general viewpoints within HP literature, however, may be understandable due to the fundamental viewpoint taken within OS that anything that reduces a person's ability to do occupation may negatively impact the health of the individual and depends on personal, social and environmental conditions (K. R. W. Hammell & Iwama, 2012; K. W. Hammell, 2008; Kiepek & Magalhães, 2011; Moll et al., 2013; Pettican & Bryant, 2007; Watters et al., 2013; Wright-St Clair, 2012).

However, from the identified application of existing concepts within OS and OT as a foundation for comprehending inequality in health, high-risk areas of health and

engagement in health, it can be discussed whether there is a tendency within contemporary OS and OT literature to “occupationalize” descriptions from other health-related professions to fit an OS and OT perspective. By imposing this perspective, the question can be raised of whether taking for granted that occupation and inequality in health are related has put researchers within OS in a position where they have missed out on exploring in-depth the indication that inequality in health seems to contain a contextual aspect of occupation. For example, Study I indicated a focus within OS and OT on engagement in health as an individual rather than on a focus on contextual issues. Considering that contextual factors have been described as key determinants in relation to inequality in health (Whitehead, 2007), and taking statements from researchers within OS into consideration (Hocking, 2012; Hocking, 2013; Moll et al., 2013), it is thus questionable whether an individualistic focus in relation to engagement in health, and thus to inequality in health, have limited work done on societal issues such as inequality in health within OS. Overall, the results from the literature review raise the question whether in-depth focus on contextual conditions, as an important aspect of occupation, may bring forth possible new perspectives applicable for understanding inequality in health and related issues from an OS perspective.

The results of the literature review can thus be argued as standing in opposition to the call for a more societal and community-based perspective on occupation as a frame for understanding inequality in health conditions (Hammell Whalley, 2013; Hocking, 2013; Moll et al., 2013; Wood et al., 2013). Following the theoretical reasoning put forward by Dickie et al. (2006), the application of a transactional perspective on occupation to the assumed relation between occupation and inequality in health forms the theoretical perspective that occupation and inequality in health are entangled and co-constructed, from the viewpoint that occupation works as the relational glue between individual and social and/or individual and environment. This consideration further provides the perspective that the lack of occupation and existing or nonexisting factors within society, the environment and the person, believed to promote limited and obscured conditions for enacting occupations, may emerge from the transaction of the person, the environment and an uncertain situation (Cutchin & Dickie, 2012; V. Dickie et al., 2006). Applying this reasoning on occupation as having a situated character forms the viewpoint that inequality in health can be regarded as a situation experienceable by individuals or groups of people because of unequal and limited possibilities for choosing to engage in and participate in occupation. Hence, occupation can be viewed as an arena for creating and hindering inequality in health.

4.4. LIMITATIONS AND FUTURE WORK

In Study I, I systematically reviewed a number articles, textbooks and official documents in OS and OT literature. This was done by applying processes suggested by Garrard (2014) in the matrix method. The applied review methodology is not intended to systematically combine the results of previous studies or to appraise the quality of the evidence. The procedure used to analyze the content of the identified

literature in Studies I and III was chosen by me, in agreement with my supervisors. As such, the importance I attributed to the identified themes might have influenced the content of the synthesis and therefore also the findings of the studies. It is also worth noticing that not all concepts related to inequality in health were used in the search strategy in Study I. Even though an initial search of literature identified terminology relevant for the study, more concepts are most likely relevant within the area of inequality in health or areas related to this. Future work may prove to supplement the results of Study I by the use of other or broader keywords in a search of literature concerning occupation and inequality in health. A discussion of the use of the review method, including a comparison with other methodological approaches to a literature review, can be found in section 7.3.1.

Considering the results of Study I and the reflections above, it can be argued as important to direct future research on inequality in health within OS toward another point of departure. This point could be the ongoing interplay between the context and the person, from the perspective that the occupations of citizens experiencing inequality in health are not placed within the individuals or between them but rather within the transactions between the environmental, social, cultural, historical and personal aspects. This theoretical point of view may lead to in-depth knowledge of contextual conditions as an important aspect of the assumed relationship of inequality in health and occupation and may provide knowledge on the experienced situation of unequal and limited possibilities for choosing and participating in occupation.

It is conceivable that although I have contributed with an understanding of inequality in health from a transactional perspective on occupation, future work may provide other theoretical perspectives. Yet although other theoretical perspectives on understanding inequality in health would be relevant, the findings of Study I show that empirical work concerning the relation between occupation, inequality in health and related areas is missing. As such, following the intended consecutive structure of the studies presented in this thesis, it is relevant to empirically explore the suggested understanding of inequality in health.

4.5. CONCLUSION

In Study I, the following research question was asked: *How can health inequalities, high-risk areas of health and engagement in health be described and analyzed from an occupational science perspective?* The study showed that inequality in health, high-risk areas of health and engagement in health are described and conceptualized within OS and OT literature by the use of environmental, social, cultural, historical or personal perspectives of occupation. Overall, Study I contributes with the finding that there is an assumed relationship between occupation and inequality in health, high-risk areas of health and engagement in health within OS and OT literature. This assumed relationship is characterized by the lack of occupation, created by unequal and limited possibilities for choosing and participating in occupation, and it was concluded that different existing or nonexisting factors within society, environment

and persons promote limited and obscured conditions for enacting occupations. A transactional perspective on occupation suggests that a lack of occupation and existing or nonexisting factors can be viewed as emerging from the transaction of the person, the environment and a complex, fluctuating and uncertain situation. From this perspective, inequality in health, high-risk areas of health and engagement in health may then be described and analyzed as a situation that can be experienced by individuals or groups of people due to unequal and limited possibilities for choosing and participating in occupation.

CHAPTER 5. STUDY II

The aim of Study II was to explore how underprivileged citizens experiencing health challenges use technology in everyday life to engage with health. From this aim, the following research question was developed:

RQ: How do adults with health and life challenges use technology in everyday health management?

5.1. REVIEWING THE LITERATURE

The following international databases were searched for the ten-year period 2004–2014, because of their relevance for HPT and my knowledge about where research concerning the topic is typically published: PubMed, AMED, CINAHL, Science Direct, ACM Digital Library and SCOPUS. Google Scholar was also searched generally for further literature. To narrow the search, specific keywords identified in an initial search for literature were combined with the head terms of the search, resulting in the following search combinations: *health-promoting technologies* OR *health-enhancing technologies* OR *health technology* OR *telemedicine* OR *telehealth* OR *eHealth* OR *mHealth* OR *information and communications technology* OR *human computer interaction* AND *adults* OR *grown-ups* AND *citizens* OR *patients* OR *population* AND *high-risk areas of health* OR *underprivileged residential areas* OR *low-income communities* OR *vulnerable citizens* OR *underserved citizens* OR *marginalized groups*.

Included in the study was original full-length empirical research applying qualitative or quantitative research methods as well as reviews and official reports based on empirical research, published in English in relevant peer-reviewed scientific journals from 2004 to 2014. Overviews, editorials, theoretical manuscripts, comments and nonpeer-reviewed literature such as theses and books were excluded from the search process.

From the literature search, interesting titles were selected. Studies matching the inclusion criteria were then identified, and an abstract analysis was conducted. From this, exclusions were made, and studies for full-text analysis were identified and retrieved. Finally, key studies were included in the review and were carefully read and abstracted with a column for each of the topics chosen, using the structure presented in the matrix method (Garrard, 2014). The column topics were journal, title, author, year, country, purpose, participants, findings and methods. A synthesis of similarities and discrepancies was conducted based on the objective of the study, including an evaluation and interpretation of the findings and the methods used in the papers. To appraise the quality, the papers were analyzed by looking at the transparency, trustworthiness, transferability and ethical considerations of the research design. As illustrated in Appendix B (Identified empirical research on HPT

for underprivileged citizens), six key publications were included in the review. A detailed presentation of the selection process is presented in Figure 4.

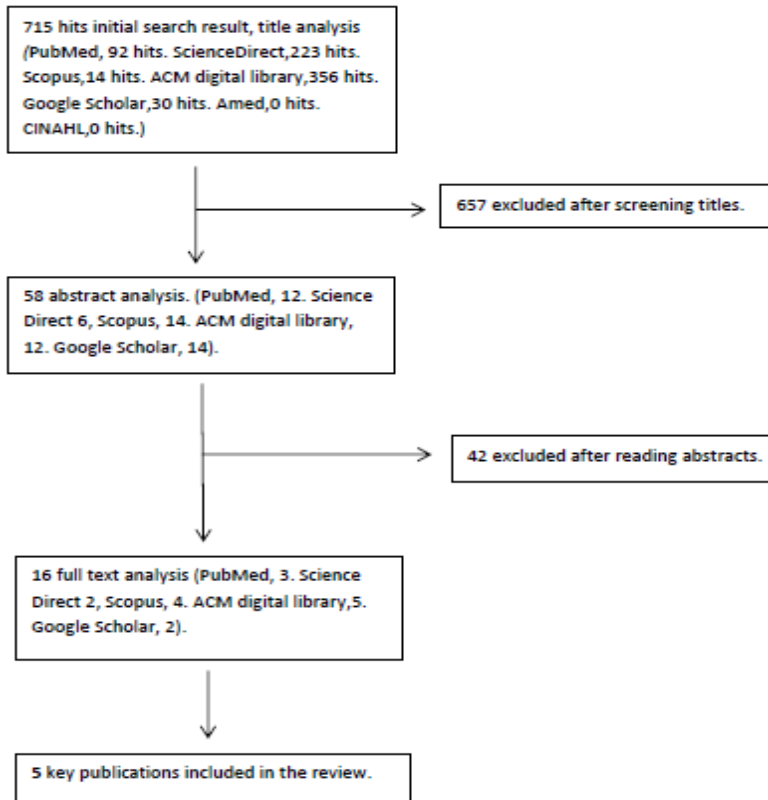


Figure 4: Selection process of literature in Study II.

As unfolded in section 2.3, which describes similarities and discrepancies in empirical design research on health-promoting technologies for underprivileged citizens, my analysis of the included publications revealed that research focusing on technology with an HP aim and its influence on the health of underprivileged citizens is limited. Further, the review of literature showed that although empirical research within HCI and HIT have provided knowledge on technical approaches for supporting underprivileged citizens in health management, empirical research on how underprivileged people use technology in their everyday lives is scarce.

5.2. METHOD

Study II was carried out as a qualitative exploratory study, following a contextually based frame (Flick, 2009; Maxwell, 2008). In line with the designated need within HIT to engage with real people and to describe how they cope with the challenges of taking responsibility for their own health (Bull, 2010; Moen & Brennan, 2005; A. Parker et al., 2012; Showell & Turner, 2013b; Siek et al., 2009; Turner et al., 2013), a participatory approach was chosen for the purpose of obtaining rich data through an engaging and cooperative process of data collection and analysis (Kanstrup & Bertelsen, 2016; Muller, 2003; Simonsen & Robertson, 2012).

The choice of a participatory approach was inspired by participatory design which is defined as “a set of theories, practices, and studies related to end-users as full participants in activities leading to software and hardware computer products and computer-based activities” (Muller, 2003). A key element in the methodological considerations on applying a PD approach to Study II was to establish what Muller (2003) has described as a third space. As used in this thesis, a third space can be described as a collaborative research space, distinguished by its intersection with the participants and its capacity to connect the participants to researchers in a mutually enhancing way (Muller, 2003).

5.2.1. SETTING

As described in section 2.1, community settings described as underprivileged residential areas are pointed out as districts with health inequalities (Diderichsen et al., 2012; Sundhedsstyrelsen, 2015). From this knowledge, a residential area in the north part of Denmark, identified by the Danish Health Authority as a district with health inequalities (Sundhedsstyrelsen, 2015), was chosen as the geographical setting for collecting empirical data. This identification was based on a high concentration of residents who are unemployed, who have low/no education and who have chronic illness as well as a high number of whom (compared to national measures) smoke, are obese, have a low physical activity level and are often unrelated to the labor market (Diderichsen et al., 2012; Sundhedsstyrelsen, 2007). The residential area comprises 3,190 households with a total of 6,376 residents (NIRAS, 2011).

5.2.2. RECRUITING PARTICIPANTS

Prior to the process of recruiting participants, I obtained initial knowledge on the residential area through my participation as researcher in a PD project focusing on the design of HIT to tackle health inequality by supporting health cooperation among residents in the identified area. In this project, we carried out neighborhood walks with residents and community workers in the neighborhood, for the purpose of understanding the context, resources and values of the neighborhood (Bertelsen & Kanstrup, A.M. & Madsen, J., 2017; Kanstrup, Bertelsen, & Madsen, 2014). On the basis of these neighborhood walks, snowball sampling was chosen to include participants in the study (Biernacki & Waldorf, 1981; Noy, 2008). Contact was established with two community workers who participated in the neighborhood walks, both working in a local health center and thus familiar with the citizens living in the area, to assist in recruiting participants for the study.

At a preparatory meeting, the community workers were informed about the objective of the study, and the following inclusion criteria, inspired by criteria set up by the Danish Health Authority, were used (Sundhedsstyrelsen, 2009): adults (18+), suffering from health problems, early retirees, social security recipients and/or unemployed, capable of writing and understanding the Danish language and living in the selected residential area. Any participants who did not match the inclusion criteria of the study were excluded during the sampling process.

Citizens were subsequently contacted and informed by the community workers regarding the content of the study, through face-to-face contact, phone, text message or email. A total of 15 adult citizens were initially contacted and informed about the study by the community workers. Upon confirmation of participation, contact information for the adult was passed on to the researchers. The first author then contacted the adults by phone for the purpose of introducing them in detail to the aim and content of the study. From this contact, ten adults agreed to a first face-to-face meeting. Of these ten, two adults declined participation due to illness and/or private matters, and one adult chose to withdraw from participation during the subsequent collection of data, also due to private matters.

Seven participants were ultimately enrolled in the study. After the process of enrolment, it turned out that all participants were suffering from either somatic or psychiatric disorders. Five of the participants suffered from a diagnosed chronic condition. The participants consisted of six women and two men, aged 27 to 66. Five of the participants lived alone, two were single mothers and one participant was living with his family. Table 2 presents an overview of the enrolled participants.

Participant (P)	Gender/Age	Family/relationship	Health condition	Position
P1.	Male, 52	Living alone	Chronic somatic disorder	Early retiree
P2.	Female, 36	Single mother of one child	Psychiatric disorder	Social security recipient and unemployed
P3.	Female, 44	Single mother of one child	Psychiatric disorder	Social security recipient and unemployed
P4.	Male, 66	Living with his family	Chronic psychiatric disorder	Early retiree
P5.	Female, 62	Living alone	Chronic somatic disorder	Early retiree
P6.	Female, 35	Living alone	Chronic psychiatric disorder	Early retiree
P7.	Female, 47	Living alone	Somatic disorder	Early retiree

Table 2: Overview of participants enrolled in Study II.

5.2.3. COLLECTING EMPIRICAL DATA

Empirical data were collected over a period of four months, from December 2014 to March 2015. The process of collecting data consisted of three steps: a) introduction and completion of cultural probes (December 2014); b) an individual qualitative follow-up interview (January and February 2015); and c) a joint workshop (March 2015).

5.2.4. CULTURAL PROBES

Cultural probes were chosen as the primary method of data collection about technology use in everyday health management, because of the technique's attention to engaging people in collecting data about everyday life situations. Cultural probes were developed as a technique for data collection in, with and about people's everyday lives in residential areas. Cultural probes are materials developed by researchers with questions and tasks for participants; they are delivered and introduced to participants who typically have one to two weeks to engage with the materials, after which the participants return them to the researchers. Data from cultural probes typically include photos, diaries, mappings etc. (B. Gaver, Dunne, & Pacenti, 1999; W. W. Gaver, Boucher, Pennington, & Walker, 2004).

The cultural probes used in Study II for collecting data were developed based on recommendations from Gaver, Dunne and Pacenti (1999) and Mattelmäki (2006). This was done with the intention of a) fitting the context of the participants; b) communicating interactively with participants; c) being stimulating and fun to complete; d) being structured enough to constrain data collection to the specific aim of the study; and e) including issues derived from the aim of the study (B. Gaver et al., 1999; W. Gaver & Dunne, 1999; W. W. Gaver et al., 2004; Mattelmäki, 2006). The probes were structured as three missions for the participants to complete. As illustrated in Figure 5 (Probe pack developed for Study II), the three missions were delivered to participants in a box containing a) an information sheet and b) three sealed, date-marked "mission envelopes."

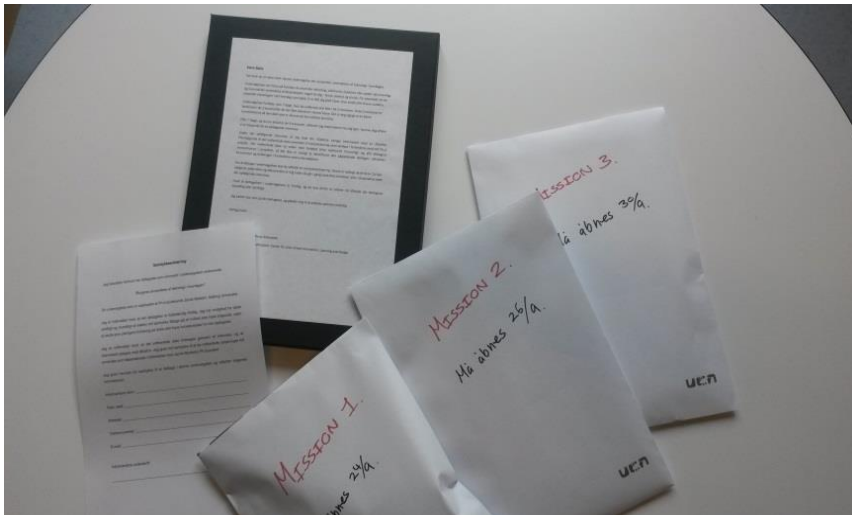


Figure 5: Probe pack developed for Study II.

The information sheet asked the participants to follow an overall timeline of seven days and to open the mission envelopes on the marked dates. Each mission envelope was provided with probe materials and instruction letters containing a detailed description of the tasks and materials. The participants were instructed to open “mission 1” on the first day, “mission 2” on the third day and “mission 3” on the seventh day. The three missions were thus to be performed sequentially with small overlaps. It was suggested that participants spend 20–30 minutes each day on each mission. The three missions were the following:

Mission 1. The participants were given a disposable analogue film camera and a notebook. The participants were to take photos of their use of technology for managing everyday health and write down a note explaining what they photographed and why they photographed it.

Mission 2. The participants were given five enveloped postcards numbered one to five (one per day) and were provided with one question per postcard and space for writing their answers. All questions were presented in the same order to all participants. The questions were as follows: a) Which kind of technology have you used today, and why; b) Which is the best technology you have used today, and why; c) What is your favorite technology, and why; d) Which technology helps you to live healthier, and how; and e) Where have you used technology today, and why?

Mission 3. For this mission, the participants were given a piece of paper with space for drawing and for related description. The participants were asked to draw and describe the optimal “machine” to support their everyday health management.

The cultural probes were initially pilot tested on a volunteer. After this test, adjustments were made, and all probe packs were completed. A first meeting was carried out in each participant’s home or at the local health center, aiming to determine the participants’ backgrounds, introduce probe packages, and answer questions concerning them. At this first meeting, I read through the participant information sheet together with the participants to avoid any misunderstandings. During the introduction to the probe pack, I also encouraged the participants to contact me in case of questions when fulfilling the missions or in case of being unable to carry out the missions. Ten days after the probe initiation meeting, I retrieved the probe packages from each participant, and meetings for follow-up interviews were scheduled.

5.2.5. INTERVIEW

As recommended by Mattelmäki (2006), follow-up interviews were carried out with each participant, focusing on in-depth explanations of the content of the returned probes. Hence, I conducted a semistructured qualitative follow-up interview to

obtain in-depth explanations of the content of the fulfilled probes. This was done within at least 14 days after I retrieved the probe packages from each participant.

Prior to the follow-up interviews, I made an initial analysis of the returned probe material. The procedure of this analysis is described more fully below. On the basis of this analysis, a semistructured interview guide was developed. Themes in the interview guide were, for example, “artifacts used in everyday life” and “the technology's influence on everyday health management.”

During the follow-up interviews, photos taken by the participants, their answers to postcard questions and their drawings of the optimal “machine” to support their everyday health management were subject to joint examination and discussion. To encourage the participants to elaborate further their use of technology for everyday health management, and as an additional tool in line with the occupational perspective of this thesis and theoretical resources from occupational science studies of time use in everyday life, I developed the Everyday Circle (C. Christiansen, 2005; Pentland, Harvey, Lawton, & McColl, 1999). As described below, I asked the participants to use this tool, so I could gain further information about their use of technology in their everyday lives for daily health management. All interviews were audio recorded after participant consent and were stored securely. Subsequently, the audio recordings of the interviews were transcribed verbatim for later analysis, within two weeks after each follow-up interview.

As mentioned, prior to the follow-up interviews, I conducted an initial analysis of the content of the fulfilled probes (see section 5.4.2). Based on this analysis, a semistructured interview guide was developed, based on guidelines set out by Kvale and Brinkmann (2014). The interview consisted of broad open-ended questions to encourage participants to describe more in-depth their use of technologies in their everyday lives (Kvale & Brinkmann, 2014). Photos taken by the participants, their answers to the postcard questions and their drawings of the optimal “machines” to engage them with health were all subject to a joint examination and discussion between the participants and me, in order to obtain as much data as possible.

The interview was ended by the filling out of the Everyday Circle for the purpose of gaining further in-depth knowledge of the participants' use of technology in everyday life. As illustrated in Figure 6, the Everyday Circle is a circular map illustrating typical everyday activities divided into main categories, such as household, transportation and taking care of yourself, and into subcategories, such as laundry, cooking, public transport and eating and drinking. I asked the participants to apply green stickers on the map to illustrate in which activities they normally used technologies in their everyday lives, and secondly, to apply red stickers to the map to illustrate which technologies meant the most for their engagement with health.

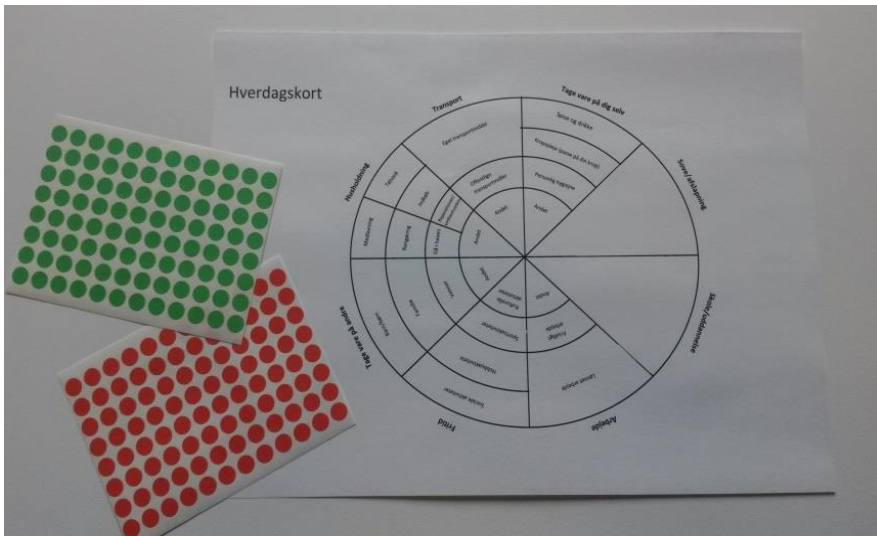


Figure 6: The circular map of everyday activities applied at the follow-up interviews.

5.2.6. WORKSHOP

In the third step of collecting empirical data, a joint workshop was carried out at the local health center. This workshop was planned for the purpose of validating and discussing the analyses of the data obtained through the application of probes and follow-up interviews in cooperation with the participants. The workshop further served to obtain additional data relevant to the purpose of the study. Out of the seven participants enrolled in the study, two participants did not attend the workshop due to illness. The workshop took the following structure:

1. A presentation by the researchers of their analyses of data obtained through the application of probes and follow-up interviews.
2. Mutual group discussion and reflection on the analyses.
3. Group work by the participants on optimal designs of technology to engage in health-related occupation for two fictional characters. The fictional portraits were created by me based on data collected by the probes and interviews. One group consisted of two participants and a researcher, while the other group consisted of three participants and a researcher.
4. A group discussion on how, when, and why the participants themselves would use the suggested designs of technology for engagement in health-related occupation.

The intention of applying fictional characters to the workshop was to give the presented data what Muller (2003) has called a “narrative structure” and for the purpose of triggering conversation between the participants and the researchers on the use of technology for health management. As shown in Figure 7 (Fictional characters Bjarne and Louise applied at the workshop), the portraits described fictional characters representing typical citizens living in the residential area.



Bjarne 54 years old. Trained industrial painter but unemployed due to work-related injury. Living alone in a two-bedroom apartment. <i>I'm addicted to just throwing myself onto the sofa or just standing and looking as if I'm doing something. And of course it helps nothing in life!</i>			
Background	Challenges	Motivation and competences	Dreams
Has been granted disability pension since 2001. Is divorced and has no children. Has a brother who lives in Odense. Suffers from overweight and has difficulty walking. Diagnosed diabetic.	Has a hard time getting from idea to action. Needs to see a meaning in everyday life. Has trouble knowing what is right to do in relation to health.	Likes to help others. Is fascinated by technology but cannot afford to buy much. Has lived in the area all his adult life.	Wants to lose weight. Would like to be better at cooking. Has a desire for more content in his everyday life.
Louise 32 years old. Is unemployed and in assessment for flexible jobs. Social security recipient and living alone with her two daughters in a three-bedroom apartment. <i>There is not anyone who shall whip me and tell me what to do. I'll reach my goals in my own way! But it might be nice sometimes if you could talk to anyone about it all. I do not have a sparring partner in everyday life.</i>			
Background	Challenges	Motivation and competences	Dreams
Has no contact with her daughters' fathers. Has a mother living in Hjørring and an older brother living in Aarhus, both of whom she rarely sees. Previous cannabis user. Takes antidepressants. Has several times had a job but has not been able to maintain it.	Often has a "bad day". Has trouble figuring out and clearing her situation. Is not that good at saying no.	Has a great desire to get on with her life. Is good at expressing herself in writing. Loves to cook good and healthy food when possible.	Would like to offer her daughters a better life. Hopes that one day she might be able to help others in her situation.

Figure 7: Fictional characters Bjarne and Louise applied at the workshop.

All presentations and discussions during the workshop were audio recorded after the consent of the participants and were securely stored. The audio recordings of the workshop were transcribed verbatim for later analysis, within two weeks after the workshop.

5.2.7. ANALYZING EMPIRICAL DATA

The empirical data material was subject to three interconnected analytical processes, due to the iterative and cooperative process of gathering data. As illustrated in Figure 8, this process consisted of a) a first structural analysis, b) an inductive qualitative content analysis and c) a final qualitative deductive content analysis.

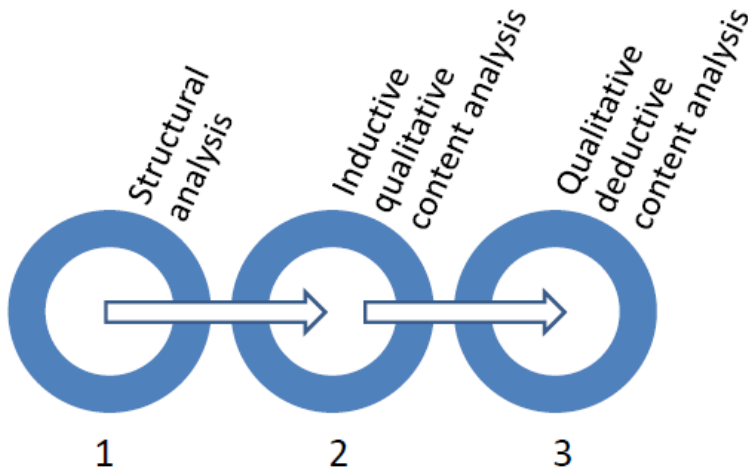


Figure 8: Three interconnected analytical processes applied in Study II.

I used the QSR NVivo software (QSR International Pty Ltd., 2014) for saving, reading, organizing and supporting the analysis of empirical data material through all three interconnected analytical processes. My reasoning for the selection of this program is to be found in the possibility of using the program to organize all data material (transcribed interviews and discussion, pictures and drawings) into one unit. Further, the program was chosen due to the possibility of grouping the different kinds of data together into the same classifications. Finally, I chose the program due to its fitness for carrying out content analysis (Bringer, Johnston, & Brackenridge, 2004; White & Marsh, 2006).

The first analysis was conducted to provide appropriate structure to data obtained through the application of probes. The focus in this first analysis was on organizing photographs, postcards and drawings so that they appeared open for sense making and interpretation in cooperation with the participants during the follow-up interview (Mattelmäki, 2006).

In the second analysis, an inductive qualitative content analysis of the transcribed follow-up interview recordings and data obtained through the application of cultural probes was conducted, prior to presenting this analysis to the participants at the joint workshop (Elo & Kyngäs, 2008). The purpose of this inductive content analysis was to a) provide an overview of how the workshop should be organized, with the purpose on collecting additional data; b) provide a structure for presenting the researchers' analyses of data obtained through the application of probes and follow-up interviews; and c) create the two fictional portraits applied for group work at the workshop. To prepare for this second analysis, I identified two units of analysis in line with the purpose of the workshop. One was "characteristics of the technologies used" (by the participants), and the second was "personal characteristics limiting everyday health management."

I subsequently continued the inductive analytical process by reading the verbatim interview transcripts carefully and reviewing the total content of all fulfilled probes. This was done for the purpose of becoming immersed in the data and developing a thorough understanding of the data as a whole. In organizing it, I carried out coding, categorization and abstraction. When coding, as many notes and headings as possible were provided for the data when reading it, and these were then gathered into a coding sheet. Derived from this, I generated subcategories that served as a means of describing the units of analysis. Finally, an abstraction was made in order to formulate general descriptions, and subcategories were named by using content-characteristic words. As preparation for reporting the findings of the inductive analysis to the participants at the following workshop, I made a PowerPoint presentation of the findings. In addition, the two ethnographic portraits were created on the basis of the identified themes.

In the third analysis, in conformity with the objective of Study II, the participant's use of technology for everyday health management was identified as the unit of analysis. Prior to conducting a final qualitative deductive content analysis (Elo & Kyngäs, 2008), I initially organized data material collected from the workshop and combined this with data collected from the probes and interviews into one total set of data. And as shown in Figure 9 (Overview of activities in which the participants used technologies), data obtained during the Everyday Circle applied in the follow-up interviews were organized into one circular map. This was arranged for the purpose of creating an overview of what the activities were in which the participants used technology (green dots) and in which activities the use of technology meant the most for the participant's daily management of health (red dots). After this organization of data, verbatim transcripts of the interviews and the discussions from the workshop were carefully read, and the total content of all fulfilled probes,

together with materials produced at the workshop, was reviewed. This was done for the purpose of verifying its quality and developing an overview of the data as a whole (Elo & Kyngäs, 2008).

Subsequently, Dewey's theory of transaction was employed as a theoretical lens during the following organizing of the deductive data analysis. This was operationalized by applying Dewey's notions of an "indeterminate situation" and a "determinate situation" as an overarching framework of understanding the participants' everyday health management. In line with Dewey's description of an indeterminate situation as the antecedent condition of inquiry (Dewey, 1938), I thus initially focused on analyzing characteristics, challenges and needs of the participants' everyday health management. Then I carried on the analysis with emphasis on the concepts of habit, context and end-in-view, due to their centrality in the theory of transaction (Dewey, 1958; J. W. Garrison, 2002; J. Garrison, 1999; J. Garrison, 2001; Kestenbaum, 1977). Overall, all data was thus reviewed for content and was coded for correspondence to and exemplification of the concepts of indeterminate situation, determinate situation, habit, context and end-in-view. I also generated subcategories as a means of describing the unit of analysis.

During this part of the analytical process, I marked quotations with a "P" for "participant" and with a number from 1 to 7 in order to explain which participant was quoted. For the purpose of enriching the reporting of results, quotations representing general consensus among the group of participants were identified for each subcategory. I carried out the coding and forming of subcategories, while the subsequent abstraction and discussions on these were continuously conducted in cooperation with my supervisor. As presented in section 5.3, an overall abstraction on the findings was made in relation to the objective of Study II. The original language of probe kits, interviews and discussions was Danish and was therefore analyzed in correlation to this language to ensure credibility. I later translated into English the quotations identified as representing the general consensus among the group of participants. Finally, these quotations were proofread by a professional proofreader.

Appendix C presents the structured categorization matrix that I developed to synthesize the analytical process. The matrix was created in accordance with Dewey's theory of transaction and served the purpose of framing the relationship of the concepts chosen as main categories for the coding of data. The horizontal components in the table show Dewey's notion of indeterminate and determinate situations, along with columns for reporting artifacts used by the participants, features and functions of these and a column for an overall transactional perspective. The vertical components in the table show Dewey's notion of the concepts of habit, context and end-in-view.

5.3. RESULTS

As illustrated in Figure 9, the citizens participating in the study used technologies in several types of activity during their everyday lives (green dots). Activities such as cleaning, eating and drinking, spending time with family and doing social activities were pointed out by the participants as activities in which they used technology the most in their everyday lives. The types of technologies used the most by the participants varied over a wide range from kitchen appliances, cleaning machines and technologies related to personal hygiene to televisions, computers and phones. Not surprisingly, however, the participants did not report any use of technology in school or educational activity or in paid work. This finding thus turned out to be consistent with the inclusion criteria of the study.

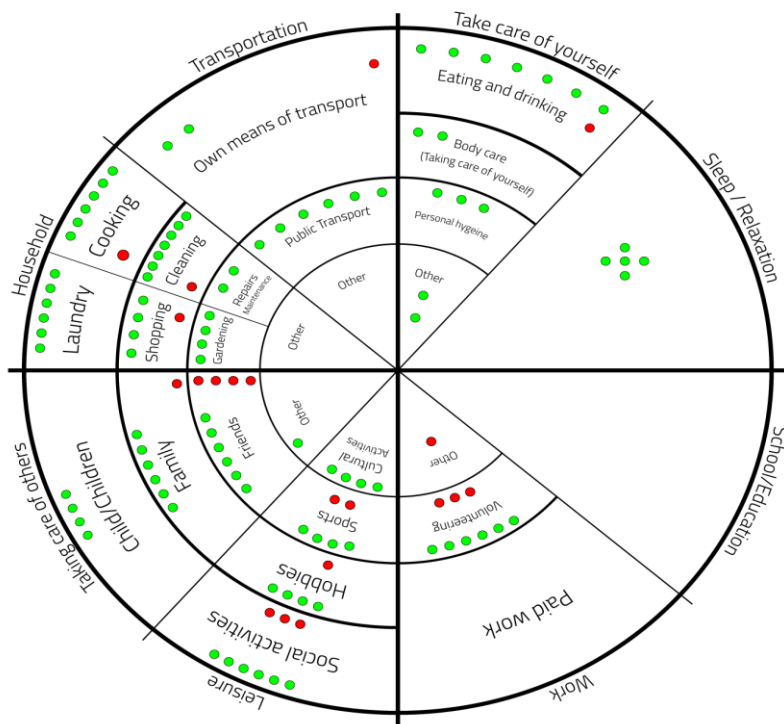


Figure 9: Overview of activities in which the participants used technologies.

The participants identified the use of technology for creating social relations in everyday life as being most central to their management of everyday health (red dots). This became evident by the participants' emphasis on taking care of friends, doing social activities and doing voluntary work as activities in which their use of technologies was essential for their daily health management. Remarkably, however, it was found that none of the participants reported using technology designed specifically for health management, for example, technologies specifically for HP. Rather, as shown in Appendix C, the technological artifacts pointed out by the participants in relation to their everyday health management tended to be ICT such as televisions, computers, tablets and smartphones. In relation to this, the participants in particular highlighted features and functions related to the Internet (official webpages, social media, chat and email) as important.

The following analysis, made in accordance with the applied conceptual framework of transactionalism, revealed how the use of technologies not designed specifically for HP played a role in the participants' everyday health management. Overall, the analysis showed that the participants a) used technological artefacts available in their everyday lives to support their inquiries into appropriate habits and actualization; b) used technology to support their context-related inquiry and experience, which was relevant to their everyday health management and c) used and wished for technology to support their inquiries for uniformity and stability, as a foundation for coping with everyday life and, thereby, managing health. However, the analysis further revealed that the participants simultaneously experienced the technology that they used as d) nonsupportive in fulfilling their desired move toward new habits and e) supportive only to a limited extent in connecting to the context and obtaining an overview of communication and information relevant to their management of everyday health. The following sections will unfold these findings under the categorizations of habit, context and end-in-view.

5.3.1. HABIT

The analysis showed that habits dominating transactions of the participants' everyday lives can be seen as nonconductive to the functional coordination needed for the participants to manage everyday health. This became clear in the participants' expressions of experiencing indeterminate situations of stalling, having a bad day, confusion and a reduced desire to move on, characterized by a lack of knowledge about how to break the situation and the difficulties in translating inspiration into action. The analysis thus indicated that the participants used the technology and accessed information unproductively in relation to everyday health management, while, conversely, they wished for technology to fulfill their need for guidance, motivation and targeted personal information for creating a determinate situation of possessing appropriate habits and moving from inspiration to actualization. As such, the analysis revealed that the technologies used by the participants did not fully support these needs. Hence, the technologies used by the participants failed to provide the transactions needed to nurture the functional coordination necessary to address the challenges of breaking inappropriate habits

and moving from inspiration to actualization. Overall, the participants did use technological artefacts available in their everyday lives to support their inquiries into appropriate habits and actualization as a precondition to their everyday health management. Yet the technologies did not appear to be fully supportive of the participants' health-related inquiries.

5.3.2. CONTEXT

In relation to context, the analysis led to the assumption that the use of technology to deal with the challenges of connecting to the context and to obtaining an overview of communication and information concerning social and health care services played a vital role in the participants' possibility of forming health-related inquiries. As such, the participants' use of technology in relation to context proved to be fundamental to their reconfiguring of habits and thus a basis for generating a determinate situation of everyday health management. This became clear in the participants' need to be someone within a context, to gain access to and coordinate with and within a certain context, to have motivation from and the recognition of other citizens and to be person-centered, and the need for simplified communication. These needs thus stood as preconditions that needed fulfillment for the participants in order to use technology to manage their everyday health.

Overall, the analysis revealed that the participants used technology to support their context-related inquiry and experience, which was relevant for their everyday health management. However, the participants did express the fact that they had problems defining themselves as part of a context and had difficulties in maneuvering within social and health care communication and information systems. Hence, the analysis showed that the specific technologies and technology used generally by the participants did not fully support their context-related inquiry and experience.

5.3.3. END-IN-VIEW

Applying the end-in-view perspective in the analysis created an indication of technology used by the participants in their management of everyday health in a way that corresponded to using technology to obtain uniformity and stability in everyday life. This interpretation is based on the participants' live circumstances and how these, as described by the participants, created a demand for prerequisites characterized by the need to maintain the status quo in life, to obtain situation-convertible knowledge, for instance on their chronic conditions, and to obtain knowledge for comparison with others in the same situation. As such, the analysis showed that the participants used and wished for technology to support their inquiries into personal situation-convertible knowledge rather than technologies containing features supporting a fixed and measurable goal of healthier living. In a transactional perspective, the participants' use of and wish for technologies supporting these inquiries may be regarded as necessary stepping stones (transactions) in the participants' ends-in-view and thus in their basic drive toward functional coordination.

5.4. DISCUSSION OF RESULTS

The research question addressed in Study II was *how adults with health and life challenges use technology in everyday health management*. The aim of the study was to contribute with insights on how HPT can support underprivileged people in health management. Overall, it can be argued that the combination of a qualitative methodological approach and the application of Dewey's theory of transactionalism were useful in illuminating the complexity related to technology use in everyday health management. Further, the combination of interviews and a theoretically based analysis served to support the inseparable relationship between everyday life occupations and health, described in the background of this thesis (Wilcock, 2006). Study II can also be argued as contributing to the call for knowledge on engaging with "voices unheard," as a foundation for producing knowledge that may be useful in future empirical design research on HIT targeted to underprivileged citizens (Kanstrup & Bertelsen, 2016; A. Parker et al., 2012; Showell & Turner, 2013b; Siek et al., 2009; Turner et al., 2013).

The results of Study II revealed an understanding of the relationship of health and technology that diverges from understandings applied in the related literature on HPT targeting underprivileged adults, as described in section 2.3. This can be argued by considering the participants' identification of the use of technology for taking care of friends, doing social activities and doing voluntary work as being most important to their management of everyday health. This identification thus indicates that for the participants, social contact through the use of technology is closely related to health. This perspective is consistent with results from studies on the influence of HIT on underprivileged citizens showing that citizens' social environments are influential in regard to whether HIT has the desired effect (Kontos, Emmons, Puleo, & Viswanath, 2011). Likewise, Parker et al. (2012) point to the importance of integrating HIT within the social context of citizens in underprivileged life situations as a basis for fostering collective action on living a healthier everyday life.

Further, the identification of the participants' use of technology for obtaining uniformity and stability in everyday life points to the fact that upholding the status quo in everyday life was more important for the participants than pursuing health-related goals, such as exercising more and losing weight. Therefore, it can be argued that Study II contributes with the finding that underprivileged adults may have a different perception of what health is in relation to everyday life than the understanding of health applied in the dominant literature on HPT targeting underprivileged citizens. In relation to this, it is conceivable that the participants' perception of health may explain why they did not report using technology designed specifically for health promotion.

Study II revealed that technologies that simultaneously take account of and support the merging of the necessary and complex interplay of personal and contextual conditions may play a key role in underprivileged adults' searches for and need of

support in their inquiries related to management of health in everyday life. As such, Study II brings forth a perspective similar to those highlighted in related empirical research, that technologies designed for underprivileged adults to manage everyday health should match the everyday life and capacity of the individual adult through features such as personalized feedback, recommendations, advice and health-related encouragement (Jimison et al., 2008; King et al., 2013; A. Parker et al., 2012; Siek et al., 2009). This became clear in the participants' expressions of the need for support of inquiries into appropriate habits and for actualization through guiding and pushing, targeted personal information and person-centered and simplified communication.

However, it can be argued that the results of Study II add two important perspectives to findings in related empirical research. First, the study revealed that the participants wished for technology designed not only to match their everyday lives but also to match the relatedness between the participants and their contexts. This became evident in the participants' expressions of having the need for support of context-related inquiry and experience, for example, gaining access to and coordinating with and within a certain context and having the motivation and recognition from other people. Second, Study II showed that the participants' experience of not being able to fulfill inquiries related to habit, context and end-in-view by the use of technology turned out to affect their management of everyday health.

From the analysis in Study II, the participants may be considered as stuck within a situation of having more questions than answers and of being more explorative than acting in relation to their management of everyday health. This is indicated, for example, in the participants' reports of having the ability to seek information on the Internet but at the same time experiencing a lack of resources to convert this information into strategies for health management in everyday life—an unfulfilled inquiry. Although this challenge is also identified in related research into other target groups (Johansen & Kanstrup, 2016), Study II showed that due to the participants' experiences of having unfulfilled inquiries, they wished for technology that could both support their knowledge strategies on health management and also guide them on how to convert these strategies into action. Overall, this can be viewed as a matter of lack of knowledge on how to transfer knowledge from the context in which the technology and health recommendation is designed to the context of their everyday lives. This further raises the question whether “something” must be added to the design of the technologies used by underprivileged citizens, to ensure a better use of these in the citizens' management of everyday health.

Based on the participants' sustained search for and need of support in inquiries as a prerequisite to their everyday health management, Study II contributes with the finding that if HIT is to deliver technologies designed for health promotion to underprivileged citizens who experience health challenges, an inquiry focus is necessary in the design of HPT. Hence, it can be argued that if HIT is to support underprivileged citizens in their management of everyday health, the technology

should support them in shaping the courses of their full inquiries—from question to action. If Dewey's view of technology is employed in this argument, such inquiry to action-focused technologies should support citizens in practical ways regarding, for example, how to transform knowledge strategies obtained through an information search on the Internet. As an example, it is likely that this can be realized by laying out a specific course containing support for courses of action related to a specific technology in everyday occupations. In light of the participants' expressions regarding managing everyday health uncovered in Study II, it thus seems that if underprivileged citizens are to apply existing consumer communication technologies to manage everyday health, these technologies may need applications oriented toward solving day-to-day problems rather than being globally health goal-related.

In relation to this, Study II indicates that a problem-solving approach could provide possibilities for obtaining full support on context-specific inquiries and personalized actions using these technologies. Based on the needs of the participants, this could specifically involve the development of applications providing personal filters to the technology used by the citizens. This could limit and personalize the amount of health-related information. In relation to this, the distinctiveness of the citizens' needs in relation to everyday health management, as found in Study II, indicates a need to develop applications that can be connected to existing communication technology with the goal of providing detailed and structured support to the citizen on how to translate obtained knowledge on healthy living, for example from social media, into personalized action in their own everyday life settings. From the results of Study II, it can thus be argued that underprivileged citizens need technology to be supportive of additional, smaller, manageable steps to be helpful in shaping full courses of health-related inquiries. Overall, Study II indicates that underprivileged citizens would receive benefits from technologies supporting in-depth practical concerns on management of everyday health instead of goal-focused, perhaps more generalized recommendations on how to manage healthy living.

Based on the above reflections, Study II contributes to the literature by calling for a holistic perspective within the design of HIT (Bull, 2010; Khan et al., 2011; A. Parker et al., 2012; Siek et al., 2009) by observing and understanding everyday life, from a transactional perspective, as a potential theoretical frame for exploring people's use of technology to manage health in everyday life. First, an understanding of everyday life as having a situated character was acknowledged. Second, the participants' use of technology was perceived as emerging from the transaction between the individual, the context and the situation. From the employment of this theoretical frame, Study II may also be viewed as a response to the call for theory-based approaches within the development of technology-based health promotion. For example, Bull (2010) has described how the application of theory has not been given enough attention within technology-based interventions and problematizes the idea that the theoretical focus is often based on individual-level concepts when employed in technology design. In relation to this, the application of Dewey's theory on transaction as an analytical lens in Study II may serve as an example of focusing on contextual factors relevant in the development of

HIT (Bull, 2010; A. Parker et al., 2012; Showell & Turner, 2013a; Showell & Turner, 2013b; Siek et al., 2009).

5.5. LIMITATIONS AND FUTURE WORK

A significant limitation of Study II is the number of participants enrolled in the study. Out of the initial 15 contacted adults, only 7 participants completed the cultural probes and follow-up interviews, and only 5 participants attended the joint workshop. Even though I applied a participatory approach in Study II to achieve close cooperation with the small group of participants and to gain in-depth understanding (Kanstrup & Bertelsen, 2016; Muller, 2003; Simonsen & Robertson, 2012), only five participants enrolled in the study completed the full process of data collection that I had planned in advance. This placed the representativeness of the study at a considerably high level of uncertainty. In relation to this, it can be emphasized that the group of participants enrolled in Study II merely represent one culture and, further, one specific underprivileged residential area in Denmark. Hence, it must be assumed that if similar studies are conducted with different groups of underprivileged citizens, living in another underprivileged residential area in Denmark or another part of the world, it is then unlikely that the results of these studies will be consistent with the results of Study II. Finally, the study does not include an examination of any generational and gender differences related to the participants' use of technology, for example, whether younger participants were more technically savvy in their responses or whether the male participants spent more time and money on consumer technology than the female participants.

Given the challenges experienced in Study II with recruiting and retaining participants, it is important to thoroughly consider how to include underprivileged citizens in future studies. In relation to this, Michie et al. (2009) point out that the recruitment of underprivileged citizens into health-promotion programs is a known challenge. Thus, it is conceivable that the same is true when it comes to research projects. Parker et al., for example, experienced a similar percentage of participants who did not complete their process of data collection (A. Parker et al., 2012). Furthermore, Le Dantec and Fox (2015) found difficulties in establishing partnerships with citizens living in underprivileged residential areas. In relation to this, it is worth noting that the distribution of gift certificates, for instance, has been used as a motivating strategy to retain underprivileged citizens throughout the research process (A. Parker et al., 2012; Siek et al., 2009). Having in mind that recommendations on using motivational methods to increase the participation of underprivileged citizens in health-related activities have been made (Diderichsen et al., 2011; Michie et al., 2009; Sundhedsstyrelsen, 2009), it can thus be argued that future research may gain valuable knowledge from exploring suitable recruitment and retaining strategies in relation to underprivileged citizens.

In the follow-up interviews conducted in Study II, several of the participants drew attention to the fact that they had "bad days," which hampered their performance of the missions in the probe package. Likewise, the citizen who did not fulfil the probes

explained this as due to an exacerbation of her chronic condition, and the two participants who chose not to participate in the workshop gave similar reason for not attending. As such, a limitation to Study II may be that the missions in the probe pack apparently were designed inappropriately for the participants to fulfil them when having “bad days.” Further, it can be argued that the lack of an alternative meeting with the participants who did not participate in the workshop, for the purpose of integrating all seven participants into the validation of my analysis, can be regarded as a limitation. In relation to this, it can be questioned whether organizing a workshop in unfamiliar surroundings would perhaps have resulted in an even lower degree of participation. In light of the findings in Study II, it is questionable whether, in future work involving underprivileged citizens, doing workshops in a place not “native” would be an appropriate approach when it comes to creating a third space. From a participatory approach, inviting citizens into planning participatory processes would further allow them to participate even more in future research processes. In general, future empirical studies on the best possible methods of establishing a third space in cooperation with underprivileged citizens can be seen as needed. Overall, since my intended collection of data seemingly did not completely match the participants’ everyday lives, it may be regarded as a limitation.

Finally, as described in section 7.3.2, I did not test the use of the Everyday Circle in a pilot interview before applying it to the follow-up interviews, which may cast its validity into question. As such, an exploration of whether the method is suitable for producing rich data and portraying the essence of participants’ everyday lives would be necessary in further development of the Everyday Circle, if it is to be applied in future research.

5.6. CONCLUSION

The aim of Study II was to contribute with insights on how health-promotion technology can support underprivileged people in health management. From this, the following research question was asked:

RQ 2: How do citizens with health and life challenges use technology in everyday health management?

Study II exemplified and illuminated the complexity characterizing underprivileged citizens’ use of technology in everyday health management. Building on the results from Study I, this was done by applying Dewey’s theory of transaction as a theoretical framework. Empirically, Study II contributes with findings demonstrating how underprivileged adults use technology to manage everyday health. The underprivileged citizens enrolled in the study did not use technology designed specifically for health promotion and health information management. Instead, the study identified the fact that the underprivileged citizens used various technologies especially for creating social relations and that these technologies were

pointed out by the participants as being most important to their management of everyday health.

The underprivileged citizens used technology in relation to everyday health management a) to launch inquiries relevant to breaking inappropriate health-related habits and move from inspiration to actualization; b) to connect to the context of their everyday lives; c) to obtain an overview of social- and health care-related communication and information; d) to communicate with other adults on health-related matters; and e) to support their inquiries for uniformity and stability, as a foundation for coping with everyday life and, thereby, managing health. However, the underprivileged citizens experienced the technology that they used as a) nonsupportive in fulfilling their desired move toward new habits and b) supportive to a limited extent in connecting to the context and obtaining an overview of communication and information relevant to their management of everyday health. These findings can be argued as correlating with the theoretical understanding of technology described in section 3.6, that technology is situated in history and context and may both positively or negatively influence the citizens in their engagement in occupation to solve problems, fulfill needs and achieve value in their everyday lives. Overall, the findings indicate that underprivileged citizens regard health as dependent on social relationships and stability in everyday life.

Theoretically, Study II contributes with an operationalization of Dewey's theory of transaction as a theoretical framework, illustrating how the theory of transactionalism may offer a conceptual frame for researchers and designers of HPT concerned with users in underprivileged life situations and how this theory may provide a pragmatic problem-solving approach applicable in the development and implementation of HPT. From the application of a transactional perspective, Study II contributes with the finding that underprivileged citizens need support of inquiries into appropriate habits and actualization through guiding and pushing, targeted personal information and person-centered and simplified communication. The study further shows that underprivileged citizens need support in knowledge strategies on everyday health management and need guidance in how to convert these strategies in everyday health management.

From these findings, it can be concluded that supporting underprivileged adults' health-related inquiry by developing "inquiry to action"-focused applications supporting in-depth practical concerns on everyday health management may be an important emphasis in the design of HPT. Overall, the study advocates for a holistic perspective within the design of HIT in order to support underprivileged adults' full course of inquiry—from initial health-related questions to actively managing everyday health. Theoretically, these findings indicate that further research into Dewey's theory of transactionalism and inquiry will be valuable to research in OS.

CHAPTER 6. STUDY III

The aim of Study III was to explore a processual approach to the exploration of the situatedness of occupation. From this aim, the following research question was developed:

RQ 3: How can John Dewey's logic of inquiry contribute to examination of the situatedness of occupation from the perspective of how situation and occupation are related?

6.1. REVIEWING AND ANALYZING THE LITERATURE

In Study III, relevant databases such as PubMed, AMED, CINAHL and Google Scholar were searched without any period limitation for literature within OS concerning the theorizing of occupation as situated. From an initial identification of literature, citation chaining was applied as a method for searching both backward and forward in the literature. From this, more relevant literature was identified, and 9 key publications were chosen for further investigation.

A conventional content analysis was applied for an in-depth exploration of how occupation has been theorized as situated within the identified literature (Hsieh & Shannon, 2005). This procedure was chosen due to the possibility of identifying consistent research findings and argumentations concerning the aim of the study, for writing up the essence of what had been identified in relation to the aim of Study III in the included literature and for providing a structure for writing up the essence of what had been identified. All identified publications were first read repeatedly to achieve immersion and to obtain a sense of the whole. Next, sentences or words in each publication concerning the aim of the study were marked and provided with notes on my first impressions, thoughts and initial analyses. From these, codes were identified in each publication by comparing notes. Lastly, the codes were sorted into meaningful categories, followed by a grouping of the identified literature in relation to these categories (Cronin, Ryan, & Coughlan, 2008).

Principles from the matrix method (Garrard, 2014) were applied to organize the sequence of readings and to gain a suitable outline of the identified literature. This provided a structure for the registration of literature, which in the subsequent analysis proved to be relevant in forming the problem identified in the study. Appendix D (Identified contributions within Occupational Science to the theorizing of occupation as situated) describes author(s), year of publication, aim and categories identified in the analysis for each publication.

As described in section 2.4.1, my analysis of existing contributions within OS to the theorizing of occupation as situated pointed to a tendency within OS to a) focus on occupation as a situational construction only understandable by the application of a

transactional perspective b) understand the situation from the perspective of the individual's performance of occupation and c) apply static representations of the relationship of situation and occupation. As argued in section 2.4.1, these tendencies stand in contrast to the perspective of the philosophy of pragmatism described in section 3.1, which researchers in occupational science claim to have turned their focus toward in recent years and which may have kept the exploration of the situatedness of occupation on the level of answering the question of *what* happens in the relatedness between occupation and situation. As such, an answer to *how* processes of the relationship between situation and occupation unfold is needed and appears open for exploration.

6.2. DEWEYAN PRAGMATISM AS A RESOURCE

Due to pragmatism being a well-established school of thought and Dewey's lifelong interest in human practice, his pragmatic attitude was identified as a resource that provides reference points to *how* processes of the relationship between situation and occupation unfold (Bentley & Dewey, 1949; Dewey, 1958; Dewey, 2013; C. Kirby, 2005). By an analysis of some of John Dewey's work in relation to occupation, it was found that Dewey's work, and his logic of inquiry in particular, may hold an answer to the question of *how* processes of the relationship between situation and occupation unfold. Inspired by the identified publications within OS, this analysis was conducted by identifying and conducting in-depth reading of some of Dewey's basic, most well-known and central publications as well as subsequent discussion of the relevance of these with my supervisors. The following sections will unfold why Deweyan pragmatism may work as a resource for providing a processual perspective on the question of how the relationship between situation and occupation unfolds.

As described in section 3.3, Dewey (1938) referred to the term "indeterminate situation" as the antecedent condition of inquiry, shaped by contextual features. He believed that "we never experience nor form judgments about objects and events in isolation, but only in connection with a contextual whole...an object or event is always a special part, phase, or aspect, of an envining experienced world—a situation" (p. 72). Dewey described the transformation of an indeterminate situation to a determinate situation as active and operational, created by the application of knowledge through inquiry. An indeterminate situation is in itself "open to inquiry" in the sense that its constituents are not a coherent whole and, therefore, shape a problematic nature. By contrast, a determinate situation is a closed and unproblematic situation. It was Dewey's belief that when people move from indeterminate to determinate situations, they are not only adapting to meet the needs of the environment in which they find themselves, nor are they manipulating the environment to meet their needs; instead, a transformation of both is obtained through inquiry (Dewey, 1938).

6.2.1. A PROCESS OF TRANSFORMATION

Dewey emphasized the dynamic character of our “knowledge of the world” at every step in the process of inquiry. He believed that the best outcome of a process of inquiry would be what he called the “warranted assertability” of a belief, which creates a foundation for further action (Bentley & Dewey, 1949; Dewey, 1938; Dewey, 1958; C. Kirby, 2005). Dewey (1938/1958) further asserted that an initial understanding of a situation is based on past experience, which forms knowledge and habits. However, when habitual ways of responding to situations do not lead to the expected outcome, the situation may be perceived as problematic. The perceived conflict between habitual ways of acting and a problematic situation qualifies the initiation of the process of inquiry, although it may not always have this effect.

Dewey thus regarded inquiry as an affair of making sure, of obtaining knowledge and consequently of the development of a new habit. By that, he also pointed to the distinction between an object and an object of knowledge, meaning that the former exists prior to the process of inquiry; however, only the transformative process of inquiry makes the existence of the object clearly accessible to human thought. This may ignite a meaningful discovery of knowledge, with consequences for the future. From the description of knowledge as cooperative and flexible in character, Dewey thus viewed knowledge as inquiry itself—as a goal within inquiry, not a static point of arrival outside or beyond the process of inquiry (Bentley & Dewey, 1949; Dewey, 1938; Dewey, 1958; C. Kirby, 2005).

6.3. RESULT

Through ongoing discussions with my supervisor and in-depth readings of Dewey’s theory on inquiry, it was found that Dewey’s pattern of inquiry advances his distinctive viewpoint that knowledge is effective action—it is doing. This means that situations are dealt with by acting in them, by solving problems (Brinkmann, 2004; Dewey, 1938). Comparing this to occupation, an indeterminate situation of hunger, for instance, by applying Dewey’s point of view, cannot be transformed merely by passive observation into a determinate situation of not feeling hungry. Rather, the transformation requires action. As illustrated in Figure 1, Dewey described this process of transformation from an indeterminate to a determinate situation using six steps, each constituting each other (Dewey, 1938). To exemplify the consistency of thought between Dewey’s view of knowledge as effective action and what occupational scientists call occupation, I describe the process of turning hunger into not feeling hungry from an occupational perspective and bring forth the perspective that occupation holds a transformative capacity.

Figure 10 (The pattern of inquiry) explains that in the process of inquiry, each step is connected to all the other steps and to the larger situation. Hence, each step of the inquiring process is not to be understood by itself but in unity with a continuously changing situation. Thus, the exemplified pattern of inquiry is not to be seen as a static or figurative representation of how the relationship of occupation and situation

unfolds. Instead, it demonstrates the process of inquiry as Dewey (1938) explained it.

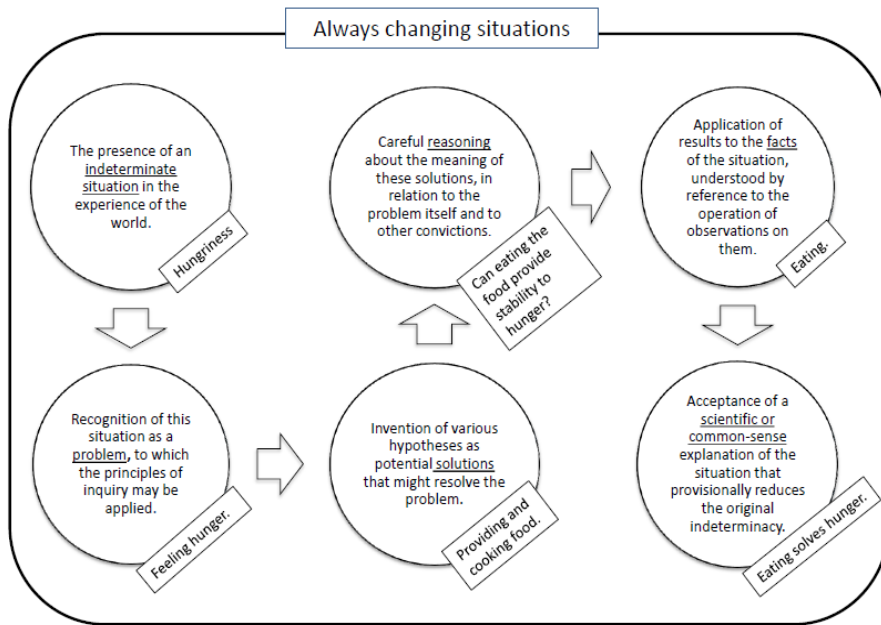


Figure 10: The pattern of inquiry.

Normally, feeling hungry causes engagement in the occupation of eating after having completed the occupation of providing some food. Yet from the process of inquiry illustrated in Figure 10, I argue that from a pragmatic perspective, engaging in an *occupation* is not limited to performing a specific “event of doing” (providing and eating food). Rather, engagement in an occupation can be understood as a broader inquiring act of seeking to bring certainty to an uncertain situation. It is the discovery of indeterminacy through the doing of occupation that works as the driving force of inquiry, causing action.

Walking around in the kitchen, cutting up the carrots, talking with the family and stirring the pot were found to be situational strategies rooted in the process of inquiry, because of their operational value. Thus, engagement in not only the next occupation(s) but in all occupations as a whole is grounded in the indeterminate situation of hungeriness and is simultaneously shaped into a procedural capacity. It is through this capacity of occupation that the indeterminate situation is experimentally transformed into one that is sufficiently determinate to solve hunger. Further, from

reading Dewey's theory on inquiry, it can be argued that when engaging in the occupation of providing and eating food, past experiences and habits guide these actions. However, habitual ways of reacting to situations may conflict with the present situation and thus lead to an inappropriate outcome. Hence, the situation can be perceived as problematic (R. M. Aldrich, 2008).

Further, from analysis of Dewey's theory on inquiry, it was found that when there is nothing within the context providing applicable knowledge strategies, such as a means to solve indeterminacy, this creates a "poor context." Hence "contextual cues" are needed for further action (C. Kirby, 2005). For instance, serving dinner to the family would not be conceivable if the context in which this indeterminacy is discovered does not offer equivalent cues as to how to engage in occupation. By that, the possibility of transforming hungriness into satiety is, following Dewey's line of thought, dependent on whether or not the context provides parallel indications triggering knowledge strategies on how to situate the indeterminate situation of hungriness as a precondition for solving it (Dewey, 1938).

By acting inquiringly through the engagement in occupations, for example, by asking the family what they want for dinner, going to the grocery store, finding and buying the right ingredients and then cooking them properly, these occupations are thus situated into the larger situation of hunger. Engaging in occupation is therefore not only dependent on previous experience and awareness of meanings and facts. Engaging in the next occupation is likewise dependent on whether or not the context in which engagement in the occupation takes place is "rich on cues." These cues could, for example, be knowledge strategies about what engaging in the next act of inquiry should be like. Following the transformative process of inquiry as emphasized by Dewey, it is misleading to say that there is an object—"hunger"—that causes engagement in occupation. Instead, the situation of hungriness becomes the name for seeking, preparing and eating food as an entirely transformative event. This event simultaneously constitutes the precondition for the next engagement in transformational occupation needed to overcome uncertainty in everyday life (Dewey, 1938; J. Garrison, 2001; C. Kirby, 2005).

It is conceivable that occupational scientists would agree with the Deweyan perspective that people engage in occupation on the basis of previous experience of performing. This is emphasized by researchers within OS who have contributed to the theorizing of occupation as situated describing how humans possess habit-based capabilities that furnish them with the means of resolving indeterminacy, performed in close interaction with influencing surroundings (R. M. Aldrich, 2008; Cutchin, 2007; Cutchin et al., 2008). Applying this understanding forms the viewpoint that individuals bring the components of a problematic situation under domination or control to match their intentional performance of occupation and thus to solve the situation. However, by an application of Dewey's line of thought, situations will change and expand human habits and experiences, because the world is uncertain and unstable (Brinkmann, 2011; Dewey, 1938; Dewey, 1958; Dewey, 2004). However, a better understanding of a situation as problematic may be gained

through inquiry, to the extent that it is no longer experienced as problematic; in this respect, the main reason that a situation is no longer perceived as indeterminate is the expansion of knowledge horizons (Brinkmann, 2011; Dewey, 2004).

In light of Dewey's theory of inquiry and the arguments put forward above, it seems reasonable that separating knowledge creation from engagement in occupation becomes problematic. It is thus the integration of operationalizable knowledge that establishes the transformative process of providing and eating food. Overall, from a theoretical perspective, knowledge can be considered as both brought to and born from the transformative process of solving the indeterminate situation of hunger. It can further be argued that the outcome of engaging in occupation is gaining knowledge of how to live life through occupation as an inquiring act.

6.3.1. ENACTED SITUATED INQUIRY

From the aspects of Deweyan pragmatism applied in Study III, it can be deduced that the situation glues the individual, the social and the environment together through its changeable nature as a dynamic source of indeterminacy (Dewey, 1938; Dewey, 1958; J. Garrison, 2001; C. Kirby, 2005). This fosters the theoretical perspective that situations change, not occupations or individuals on their own. Hence, occupation is something that goes on within and because of a situation, not only by or because of the individual. Therefore, it can be argued that if the understanding that occupations are the relational glue between individual and social or individual and environment is to be maintained within OS (Cutchin et al., 2008; V. Dickie et al., 2006), then from the pragmatic perspective applied in Study III and in this thesis, the logic of occupation cannot be separated from the logic of inquiry. This further forms the perspective that accepting occupation as a situational construct, the presence of indeterminate situations and, thus, the indeterminacy of everyday life as a key source of the situatedness of occupation cannot be excluded.

This theoretical hypothesis creates the viewpoint that if a situation shapes the continuing process of the transformational doing of overcoming problems and uncertainty in everyday life, then it is the situation that makes up human practice and not only the individual performance of occupation. Hence, a situation is not just something people can tap into as individuals. It is omnipresent, meaning that the characteristics of occupation are not "locked" by individual and personal performance of occupation. Rather, occupation, as a situational phenomenon, holds an experimental, transformative and, thus, situating process. Overall, the situatedness of occupation is, if we agree on this theoretical hypothesis, more likely to be identified in engagement in occupation as a situational act uniting the human with situations that are implicitly changeable.

From this reasoning, I suggest that considering occupation as "enacted situated inquiry" may be a resource in the future exploration of *how* occupation is produced and what determines its transformative capacity. As illustrated in Figure 11, enacted situated inquiry can, following the above unfolded pragmatic viewpoint, be

described as what happens within situations when people gain knowledge through engagement in occupation as transformative acts on how to live life. Viewing engagement in occupation as “the practical enacting of inquiry in situations” may better frame the idea that occupation is not only a relational clue between individual and environmental unfolding through transactions. Instead, occupation is an embedded and inquiringly processual act. As such, the reasoning behind enacted situated inquiry is to be found in the perspective that without an indeterminate situation as a source, the transformative capacity of occupation would vanish. Thus, it is through the fusing with this source that occupation becomes and exists as a situated practical enactment of inquiry. For researchers within OS, this perspective may also support situating occupation as the practical action of inquiry in situations.

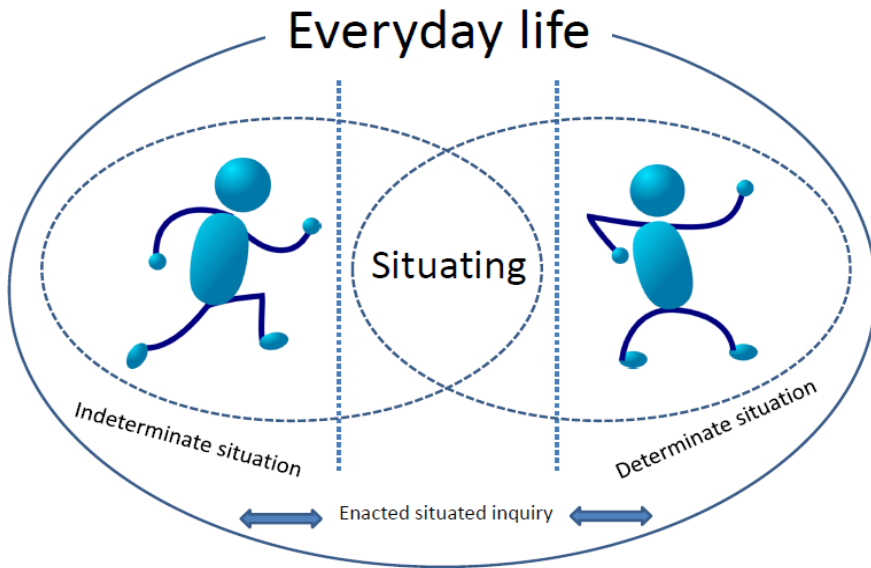


Figure 11: Illustration of enacted situated inquiry.

6.4. DISCUSSION OF RESULT

It is important to stress that the publications referred to in section 2.4.1 and in Study III (Chapter 6) are indeed valuable contributions to the search for a possible next practice in the theorizing and operationalization of the situatedness of occupation. As an example, Study III is not the first study that applies the occupation of preparing food as an illustrative example when studying how Dewey's line of

reasoning may inform scholarship on occupation. For example, Aldrich (2008) also analyzed the occupation of preparing food in her examination of occupation as transaction. Aldrich, when analyzing her process of cooking, carries out a valuable and informative example of a situational observation by using transaction as a method. However, it can be argued that the exemplification of turning hungriness into not feeling hungry in Study III complements Aldrich's example by recognizing Dewey and Bentley's (1949) statement that *transaction is inquiry*. Thus, Study III can be seen as furthering Aldrich's transactional description of occupation as a back-and-forth interplay involved in the decision-making process into a description of occupation as a situational process determined by aspects and phases of acting inquiringly.

Everyday life is arguably full of patterns of occupation such as eating and providing food. From the pragmatic perspective used in Study III, however, these occupations do not fulfil a unified whole as separate entities. Instead, applying a pragmatic perspective forms the viewpoint that occupation is constantly acted out as experiments under the premise of indeterminate situations open to inquiry. Following this reasoning, it can be argued that occupation is recognized to have a transformative capacity obtained through "doing the next." If this hypothesis is pursued even further, the transformative capacity of occupation can be described as being a prime source of contingency in active engagement with an unfinished world.

This line of thought, however, exposes an interesting problem that seems to be overlooked within OS—that the total sum of doings making up everyday life is based on the transformative nature of occupation and not on the performance of stand-alone occupations.

If the interpretation of Dewey's theory of inquiry unfolded in Study III in relation to occupation is reasonably sound, it may be considered a resource in moving the focus on a componential structure of occupation to attention on a situated structure of occupation. This attention may be applicable in avoiding the described problem of individualizing situations and of static and mapping presentations of the relationship of occupation and situation. Yet the consequences of turning the focus toward a situated structure of occupation needs to be constantly discussed within OS in order to facilitate and reach an operational use of situated occupation. Likewise, a shift toward research on the situated formation of occupation will call for changes within knowledge production in OS, because of the need to focus on the processes going on within a situation rather than on those going on between the individual, his or her occupation and the situation.

Scholars have stated that the capacity of occupation cannot be understood before situations are understood (R. M. Aldrich, 2011). From the results of Study III, however, it can further be asserted that the complete performance of occupations can only be studied in combination with the situations in which they occur as well as with the "situating" that melds both together. In relation to this, it is worth noting that the purpose of OS has been described as studying humans as occupational

beings through the individual performance of occupation and interaction with the environment (F. Clark & Lawlor, 2009; Yerxa, 1990). This description arguably leads to a methodological focus on detaching occupation from the situation of which it is part and thus studying occupation as an isolated phenomenon. From the pragmatic perspective presented in Study III, however, this can be argued as producing a further focus on *what happens* in the relationship of occupation and situation. Even though Dewey showed that humans possess the ability to hold themselves and their actions in temporary abeyance from a situation due to well-developed habit systems (Dewey, 1938; Dewey, 1958), a continuing focus on what happens may create an unproductive base for an operational focus on situatedness within OS. As such, if researchers within OS only study the habit-based performance of occupation and not occupation in combination with the resources of the situation, they will miss the opportunity to assess occupation as a transformative capacity. As a result, this may create ill-informed study of occupation as separated from its inquiring nature.

Study III shows that without an indeterminate situation as a “stimulus,” the transformative capacity of occupation would vanish. It is thus by fusing with this stimulus that occupation becomes and exists as a situated practical action of inquiry (or enacted situated inquiry). Following this argument, one cannot, when analyzing occupation, ignore relating to how occupation and situations merge, since this is really what situates occupation. If research on occupation adopts this perspective, an important implication would be to focus on situations as units of analysis, because this is where knowledge of *how* the practical action of inquiry occurs and through which engagement in occupation can be identified. However, a shift toward such a focus may implicate the exploration and discussion of methodological approaches matching the situation as a unit of analysis. Considering the methodological approaches currently applied within OS, it seems essential, from a pragmatic perspective, also to embrace approaches that provide equal attention to both situation and occupation as a whole as well as a simultaneous and merging processual analysis of both. Equal attention to both situation and occupation as a whole would require approaches that throw light on the world as comprising a mixture of situational layers. The use of a mixed-method approach as well as mixed modes of analysis, and a continuous cycle of abductive reasoning, may prove to be a valuable methodological avenue in this endeavor (Feilzer, 2010; Johnson & Onwuegbuzie, 2004; Johnson, Onwuegbuzie, & Turner, 2007). Likewise, the application of contextual methodology when studying occupation may allow occupational scientists to be free of the mental and practical constraints imposed, for instance, by a focus on the individual performance of occupation. This may further allow researchers within OS to better situate themselves to research situations (Dervin, 1997).

It is generally accepted that research within OS should provide information that strengthens strategies for using occupation as a change medium (F. Clark & Lawlor, 2009; Yerxa, 1990). It is thus relevant to discuss which perspectives the results of Study III may have generated in relation to this. Firstly, viewing engagement in

occupation as an inquiring process creates the view that the loss of ability to engage in occupation is also the loss of ability to act inquiringly in situations. Secondly, this further suggests that losing the ability to engage in occupation may create a lack of ability to access its transformative capacity and thus a loss of the ability to transform indeterminate situations into determinate situations in everyday life. Overall, these viewpoints form an understanding of occupational dysfunction as ineffective or as a lack of strategies for inquiry. If the idea that difficulties with occupations involve not effectively being able to implement inquiry into an indeterminate situation is accepted, the emphasis of occupation-focused intervention would consequently have to shift from enabling a particular occupation to enabling a practical acting of inquiry. This perspective requires a problem-solving approach when using occupation as a change medium, valuing people's potential and control over occupations within situations. Since Dewey (1938) described inquiry as occupational in nature, occupation-focused intervention supporting "enacted situated inquiry" therefore supports using occupation to achieve occupation. However, following this proposal may foster the question of whether Dewey's practical epistemology provides only hypotheses on human occupation or whether these hypotheses are transferable to a contemporary world that has changed fundamentally from the time when Dewey developed his theoretical suggestions. It is therefore obvious that future research into how Dewey's practical epistemology may provide useable knowledge, beneficial to the use of occupation as a change medium, is needed.

Developing an understanding of people who are experiencing difficulties with occupation into people who are not effectively able to implement inquiry would likely challenge communication within occupation-focused intervention and OS. The same would be the case if the focus was relocated from individuals to situations. Noting that the aim of OS is to disseminate information to increase a general understanding of people's occupational needs (F. Clark & Lawlor, 2009) by focusing on the individual performance of occupation and interaction with the environment (Yerxa, 1990; Yerxa, 2002), it can thus be argued that adopting the pragmatic views unfolded in Study III would create opposing standpoints that cannot exist in one and the same subject of communication on occupation. Communication favoring a focus on situations instead of a focus on individuals may thus be hindered by the mix of a pragmatic view of the human and a structuralist approach to producing and communicating on the complex nature of human occupation within OS (Hooper & Wood, 2002).

An implication following the perspectives put forward in Study III is that in shifting the focus from individuals to situations, occupational scientists may need to resituate their language into fostering communication on *how* the relationship of situation and occupation functions. Dewey suggested that knowledge in real life functions as a verb rather than as a noun and that it has everything to do with inquiry (Alexander, 2012; Lyons, 2010; Sullivan, 2001). Dewey suggested, to the extent it is possible, avoiding nominalization, that is, the grammatical process of turning a verb, adjective or sentence into a noun or noun phrase, since this "thingifies" an action, process or

description (Alexander, 2012; Lyons, 2010; Sullivan, 2001). By adopting this perspective, the notion of developing a discourse of the situatedness of occupation itself also invites further discussions. Applying Dewey's perspective forms the argument that in order to practice a situated understanding of humans' everyday life, another "linguaging" that values communication on the relationship of situation and occupation is required (J. Garrison, 2001; C. Kirby, 2005). By employing another "linguaging," the objectification of engagement in occupation, that is, the act of representing a process, action or relation as an object, a thing or an entity separate from its situation, may be avoided.

6.5. LIMITATIONS AND FUTURE WORK

Dewey developed his pragmatic attitude and his theory of inquiry through lifelong work. Acquiring a thorough understanding of Dewey's line of thought about human practice thus means a dedicated study of his ideas. Hence, the areas of Dewey's pragmatic attitude addressed in Study III comprise only a subset of his comprehensive work, and the application of Dewey's theory of inquiry to explore the relationship between occupation and situation can be argued as confined by its scattering throughout his extensive lifelong writings. Exploring the situatedness of occupation by applying Dewey's theory of inquiry can therefore not be fully accessed from a single source or, for that matter, in a single study. Moreover, Study III has not illuminated details about the differences between Deweyan pragmatism and other pragmatist stances. Finally, it is important emphasize that the contributions within OS to the theorizing of occupation as situated identified in study III only comprises a part of an increasing amount of literature in OS regarding the subject.

Reflecting on the results of Study III, different interesting areas for future research emerge. Considering the comprehensive and lifelong work of Dewey, future work applying Dewey's pragmatist perspective to explore the relationship of occupation and situation would first of all require in-depth studies of the many theoretical viewpoints that Dewey developed. As an example, Dewey emphasized that inquiry is a process undergoing temporal modification rather than a momentary occurrence and that it should therefore not be seen as an immovable process (Dewey, 1938). The idea of situated occupation in time is briefly touched upon in Study III, and future work exploring the relationship of occupation and situation could accordingly illuminate a possible alliance between occupation, inquiry and time. In relation to this, the difference between Dewey's notion of common sense and scientific inquiry can be argued as a relevant subject area for future work. Study III has not focused on the fact that Dewey (1938) described scientific inquiry as more systematic than common-sense inquiry, which Dewey labelled as fostering solutions on the basis of a habitual way of acting. Hence, solutions created from common-sense inquiry can be viewed as specific solutions to immediate problems, while solutions fostered by scientific inquiry have long-term consequences (Cutchin, 2013). With the result of study III in mind, future work applying the perspective of both common-sense and scientific inquiry in the exploration of engagement in occupation as a natural

inquiring process may further elaborate the suggested transformative capacity of occupation. Finally, the question of how “contextual cues” (C. Kirby, 2005) needed for further transformative action toward a determinate situation can be elucidated from an OS perspective may be an interesting subject for future studies.

In Study III, I have framed an understanding of the relationship of occupation and situation with the concept of enacted situated inquiry. However, future work may provide other theoretical perspectives on this relationship and thus additional conceptualization. Similarly, the scope and scale of Study III would not justify claiming that enacted situated inquiry should be central to future work exploring the situatedness of occupation. Rather, the extent of the study invites future research within OS that may confirm, refute or add nuance to the development of the concept on both a theoretical and, perhaps even more importantly, on an empirical level.

6.6. CONCLUSION

The aim of Study III was to explore a processual approach to the exploration of the situatedness of occupation. This was explored by asking how John Dewey’s logic of inquiry can contribute to an examination of the situatedness of occupation from the perspective of how situation and occupation are related. Through an analysis and interpretation of Dewey’s theory of inquiry in relation to occupation, it was found that Dewey, in his comprehensive work on this concern, made visible the fact that separating occupation from its relationship to situation may create a vague ground for exploring the situatedness of occupation. From this viewpoint, Study III contributes with the perspective that inherent in occupation is an inquiring process that provides occupation with its transformative capacity. This further forms the perception that engagement in occupation implies situating into ever changeable situations through the explorative and practical action of inquiry. However, this enacted situated inquiry is dependent on a context that is rich enough to provide cues for knowledge strategies on how to engage in the next experimental and transformational doing in everyday life.

CHAPTER 7. DISCUSSION

7.1. DISCUSSION OF RESULTS IN RELATION TO THE AIM OF THE THESIS

In the beginning of this thesis, I stated that I wished to contribute to the development of theoretical resources useful in further research on inequality in health and knowledge on technology use for engagement in health-related occupation within OS. It was also my wish that this thesis would further contribute with knowledge useful within future research concerning underprivileged groups of people and in developing HP programs and HPTs for this group of citizens.

The overall aim of this thesis was to develop conceptual knowledge on underprivileged citizens' engagement in health-related occupation, with attention to the citizens' use of technology for everyday health management. Each of the three studies comprising this thesis focused on different aspects concerning inequality in health, underprivileged citizens and engagement in occupation. In the following sections, the main findings of this thesis will be discussed, with an emphasis on how the three studies separately and as a whole have contributed to achieving the central aim of the thesis. The main findings will further be discussed in relation to issues raised in the background of this thesis as well as to my wishes for contribution.

Together, all the findings suggest that underprivileged citizens' engagement in health-related occupation can be conceptualized as a *situation-dependent transactional experience, characterized by the practical acting of inquiry on health-related matters*. Simultaneously, underprivileged citizens' problems in engaging in health-related occupations can be viewed as *difficulties with acting inquiringly on health-related indeterminacy in their everyday lives*. From this conceptualization, the citizens' use of technology for everyday health management can be described as *dependent on whether or not the technology takes account of and supports the merging of the necessary and complex interplay of personal and contextual conditions as well as supporting the citizens in their "inquiry to action" strategies concerning in-depth practical concerns on everyday health management*.

7.1.1. A SITUATIONALLY DEPENDENT TRANSACTIONAL EXPERIENCE

The findings from Study I contributed to the overall aim of this thesis with the suggestion that inequality in health may, from a transactional perspective on occupation, be regarded as a situation that can be experienced by individuals or groups of people due to unequal and limited possibilities for choosing and

participating in occupation. From the viewpoint that occupation and inequality in health are entangled and co-constructed, factors promoting limited and obscured conditions for enacting occupations may emerge from the transaction of the person, the environment and an uncertain situation (Cutchin & Dickie, 2012; V. Dickie et al., 2006). Findings from Study I further indicate that the concept of inequality in health may be explainable and interpretable from an OS perspective. Although Study I revealed an assumed relation between occupation and inequality in health, the study also contributes to this thesis by suggesting that living a life of inequality in health can be experienced as a situation of unequal and limited possibilities for choosing and participating in occupation. Overall, this perspective can be argued as contributing to filling the knowledge gap on exploring health inequalities from an OS perspective (Bass-Haugen, 2009; K. R. W. Hammell & Iwama, 2012; Lysack & Adamo, 2013; Madsen et al., 2016).

The results from Study I can also be considered a contribution to the call for the exploration of factors creating inequality in health in general (European Union, 2015; Mittelmark et al., 2008; Tones & Green, 2004; World Health Organization, 2014). For example, Study I provides a possible viewpoint on taking action to reduce health inequalities through HP programs, from an occupational perspective. Accepting the premise that there is an inseparable link between occupation and health fosters the viewpoint that enabling underprivileged citizens to increase control over and improve their health may well also be a question of enabling the citizens' engagement in occupation. Applying the described relation between occupation and inequality in health as a conceptual framework for HP programs would further suggest that focus within HP programs should be on preventing citizens' lack of occupation in their everyday lives as well as on reducing existing factors that limit or obscure citizens' possibilities for enacting occupation. In other words, and as unfolded in Study I, occupation can be viewed as an arena for creating and hindering inequality in health. However, this perspective is not new. Both Wilcock (1996) and Hocking (2013) have emphasized the application of "occupational lenses" in the planning and conducting of HP programs. Likewise, as found in Study I, several researchers within OS have problematized the idea that societal and environmental factors can limit people's possibility for enacting occupation and thus obtaining health (Madsen et al., 2016).

Even though the viewpoint on inequality in health suggested in Study I is rather theoretical, it can be argued, to correlate with the identified focus within policies at the global and national levels, that macro- and micro-environmental factors affect the health of underprivileged citizens, for instance, which makes inequality in health a multifaceted and complex phenomenon (Diderichsen et al., 2012; European Union, 2015; Ministeriet for forebyggelse og sundhed, Statens Serum Institut, Sundhedsstyrelsen, 2013; UNESCO, 2015; United Nations, 2000; World Health Organization, 2014). Yet Study I adds to this that even though inequality is a complicated problem, it can, from an occupational perspective, be regarded as experienceable, meaning that inequality in health can also be viewed from the perspective of a transactional lived experience. However, I am not the first to

suggest an “experienceable approach” to inequality in health, since others have pointed to the relevance of exploring the lived experience of inequality in health within related research. For instance, Blaxter (1997) explored how inequality in health is perceived among lay people and found that “inequality in health is not a topic which is very prominent in lay presentations, and paradoxically this is especially true among those who are most likely to be exposed to disadvantaging environments” (p. 747). Likewise, Popay et al. (1998) emphasize the need for an understanding of lay knowledge on the relationship between the individual and his or her context in relation to inequality in health.

In relation to this, this thesis contributes with the indication that underprivileged citizens may have alternative perceptions of health than those applied in HP programs targeting inequality in health. As found in Study II, for example, the participants needed stability in their everyday lives, rather than having a targeted focus on living healthier. The participants also pointed to the use of technology in relation to social occupations as meaning the most for their everyday health management. The findings of Study II also suggest that when policy documents suggest basing HP interventions on knowledge about citizens’ social and health conditions and also that HP activities should be planned and adapted to match the targeted citizens’ needs and opportunities (Diderichsen et al., 2011; Sundhedsstyrelsen, 2009), promoting the health of underprivileged citizens may also very well be a matter of obtaining knowledge about and matching the citizens’ need for support of health-related inquiry. As such, this thesis can be argued to illuminate what researchers within HP have stressed, that health behavior is not unitary in character and that individuals are not solely to be blamed for their possible inappropriate health behavior (Horrocks & Johnson, 2014; Pincus et al., 1998).

The theoretically generated perspective that inequality in health may, from a transactional perspective on occupation, be regarded as an experienceable situation was examined empirically in Study II, with attention placed on underprivileged citizens’ use of technology for everyday health management. Through the application of Dewey’s theory of transaction and inquiry as analytical lenses to empirical data, Study II can be argued as deepening the suggestion of inequality in health as a transactional lived experience, thus contributing to the overall aim of this thesis with the perspective that underprivileged citizens’ engagement in health-related occupation is situationally dependent. The situated approach chosen in Study II to explore how underprivileged citizens used technology in everyday health management also fostered knowledge on how contextual and environmental factors influence citizens’ inquiries into appropriate habits, for instance, and their search for knowledge strategies on everyday health management. By suggesting that engagement in health-related occupation (thus a key factor in inequality in health) can be regarded as a transactional experienceable situation, this thesis thus contributes to research within HP with the perspective that the health behavior of those citizens living a life with health and life challenges cannot be measured or even predicted only from individual perspectives. Rather, it is the transactional relationship of the citizens as well as macro- and micro-environmental factors that

shape the conditions for citizens' health-related inquiries and thus their health behavior.

7.1.2. A PRACTICAL ACTING OF INQUIRY

While Study I and Study II contributed to this thesis with a conceptualization of engagement in health-related occupation as a situationally dependent transactional experience, both Study II and Study III contributed with knowledge on a processual and problem-solving approach to the problem of inequality in health. The applying of Dewey's theory on inquiry, both as a ground for analyzing underprivileged citizens' use of technology for everyday health management and as a resource for exploring a processual approach to the situatedness of occupation, formed the basis for further conceptualizing underprivileged citizens' engagement in health-related occupation as characterized by a practical acting of inquiry on health-related matters. While Study II contributed with findings that the participants used technology to launch inquiries relevant to breaking inappropriate health-related habits, to move from inspiration to actualization and to support their inquiries for uniformity and stability as a foundation for coping with everyday life and, thereby, managing their health, Study III further developed these perspectives from a theoretical and occupational perspective. In other words, Study III contributed to this thesis by examining the transactional relationship between individuals and their context, suggested in Study I and II, from a theoretical perspective.

In Study III, I suggested first that inherent in occupation is an inquiring process that provides occupation with a transformative capacity, and I also suggested that humans situate themselves into ever changeable situations through the explorative and practical acting of inquiry (which I named "enacted situated inquiry"). Relating the idea of enacted situated inquiry to the descriptions of empowerment in section 2.2.1 generates some interesting perspectives. As an example, the idea of engagement in health-related occupation as a practical acting of inquiry can be argued as somewhat similar, for instance, to the focus on improving individuals' knowledge and practical competence in life skills through empowerment strategies (Jackson et al., 2006; Whitehead, 2007). However, viewing underprivileged citizens' ability to maintain and improve their health from the notion of enacted situated inquiry suggests that applying empowering perspectives to HP interventions targeted to underprivileged citizens may also have to include a focus on empowering the citizens' capability to processually solve health-related problems through transformative occupations in their everyday lives.

From the findings in Study III, it is also relevant to discuss whether underprivileged citizens' ability to self-manage their health by making healthy decisions in the context of everyday life may, from the perspective of enacted situated inquiry, likewise be a matter of the citizens' ability to act inquiringly on situations of either determinate or indeterminate character related to their management of health in their everyday lives. For example, Study II revealed that the participants used technology to obtain uniformity and stability in everyday life, due to their need to maintain the

status quo in life. Following this perspective, a self-management approach in HP interventions has a different meaning in relation to underprivileged citizens than the one defined by Clark et al. (1991). Self-management may possibly also be a matter of teaching the citizens, in seeking information, to take responsibility and gain control over their ability to practically act inquiringly correctly with respect to health-related matters in their everyday lives. This reasoning can further be argued as supplementing the description of self-management as day-to-day tasks that an individual must undertake to control or reduce the impact of disease on physical health status (N. M. Clark et al., 1991), with the perspective that underprivileged citizens' self-management of health may also be a matter of acting inquiringly on a day-to-day basis on indeterminate situations threatening their need for uniformity and stability in everyday life. Applying the situated perspective embedded in the conceptualization of underprivileged citizens' engagement in health-related occupation as a practical acting of inquiry on health-related matters can further be argued to contribute with a possible situated approach to promoting the health of underprivileged citizens, called for by researchers within HP (Horrocks & Johnson, 2014).

7.1.3. SUPPORTING INQUIRY TO ACTION STRATEGIES

The findings from Studies II and III indicate that supporting underprivileged citizens in their practical everyday health management may be equivalent to supporting their strategies on inquiry to action, as lived out through engagement in occupation in everyday life. From exploring underprivileged citizens' use of technology for everyday health management in Study II, it can further be suggested that this support should be made in consideration of the merging of the necessary and complex interplay of personal and contextual conditions.

The literature concerning HPTs reviewed for and included in this thesis does not seem to feature concerns on whether or not HPTs should support underprivileged citizens in inquiry to action strategies in everyday health management. In Study II, it was found that inquiries in relation to living a healthier everyday life initiated by the participants, through the use of technology, turned out to be unfulfilled, resulting in an absence of engagement in health. Even though the participants did not report on using specific technology designed for HP, this finding may indicate that if a key aspect when designing HPTs is to match the everyday life and capacity of the individual citizen (Jimison et al., 2008; King et al., 2013; A. Parker et al., 2012; Siek et al., 2009), it may become problematic not to relate to the presence of indeterminacy in everyday life as a key source of citizens' engagement with health in the development of HPTs. In light of the findings in Study III, it further seems worth considering whether HPTs are designed to support situationally dependent explorative and transformational occupation or whether they are designed for "independent personal performing of occupation."

From the findings in Study III, it may therefore be argued that developing HPTs with a focus on the presence of indeterminacy in everyday life would conceivably be

a matter of absorbing the transformative and experimental character of humans' engagement in occupation and how that holds the capability to change indeterminacy into determinacy. This perspective may further produce the interesting hypothesis that HPTs developed with increased consideration of engagement in occupation as an explorative and transformative situational act may better support underprivileged citizens in their strategies on inquiry to action in relation to everyday health management. As elaborated in Study III, engagement in occupation depends on a context rich enough to provide cues for knowledge strategies for how to engage in the next experimental and transformational doing in everyday life. In relation to underprivileged citizens' everyday health management, this forms the perspective that problems in engaging with health may be a matter of problems with acting inquiringly in situations and thus may be problems in how to transform an indeterminate situation of "having health challenges" into determinate situations in everyday life. One interesting perspective stemming from this is the viewpoint that HPTs should work as "contextual cues" needed for transforming indeterminate situations into determinate ones. This leads to the question of how technology can provide a context for citizens to promote the desired transformation.

For instance, HPT providing contextual cues related to health matters would include technologies serving as supports in how to live out knowledge strategies (from inquiry to action) for the citizens and thus as supports for the possibility of citizens to relate to and transact with and within the context of their everyday lives, as a foundation for engaging with health. As examples of technologies providing the citizens with inquiry to action strategies, the participants in Study II mentioned that achieving motivation and recognition from other citizens and comparing themselves with others in the same situation through the use of social media such as Facebook provided inspiration for their concerns about eating healthier and losing weight. Other citizens appreciated "guiding and pushing" by connecting to official webpages and social media that specifically dealt with issues they could relate to their everyday lives. This mostly concerned the citizens' chronic conditions and their confusion about how to cope with these on a daily basis. In general, the citizens emphasized the notion of "searching the Internet" as valuable in obtaining an overview of communication and information, although their ability to internalize information did appear to be unmanageable.

In relation to HPTs serving as contextual cues providing knowledge strategies for underprivileged citizens' engagement with health, the following appear as examples of good practice. King et al. (2013) found that a community center-based ECA virtual advisor providing tailored advice and support regarding physical activity led to a meaningful four-month increase in walking among underserved older adults. Parker et al. (2012) also found that a community-anchored digital tool consisting of two interface points (the citizen's cell phone and visualization software running a touchscreen monitor), which allowed citizens to share healthy eating ideas with each other, could help shift users' attitudes regarding their roles as advocates for health behavior change.

From the above reflections, it can be argued that this thesis contributes to the need to engage with underprivileged citizens within studies of HIT's role in solving the problem of inequality in health. From a participatory approach, the thesis can further be argued as contributing with knowledge that may be useful when designing health applications intended to support underprivileged citizens' ability to gain control over and improve their health (Kanstrup & Bertelsen, 2016; A. Parker et al., 2012; Siek et al., 2009). Overall, the thesis contributes to fill the knowledge gap on how underprivileged citizens experience and interact with technology as part of their everyday health management. This contribution is characterized by its example of how to obtain knowledge that is useful in working with the dynamics of everyday life where technology must be implemented. In relation to this, the thesis may inspire future policy aspects concerning the implementation of HPT in HP programs in that many organizations and municipalities are focusing on the possible effect of HPTs in reducing imbalances in health conditions, a consequence of a growing political focus on inequality in health.

The operationalization of Dewey's concepts of indeterminate situation, determinate situation, habit, context and end-in-view into an analytical tool serves as an example of a conceptual frame for researchers working with everyday health management and HPT. From this, the thesis can be seen as contributing with perspectives on how to analyze everyday health management from a situated perspective, and choosing a situated approach may provide researchers and designers with knowledge about the layers of complexity, interactions and conditions characterizing users' everyday life settings and thus their use of technology. Finally, the thesis may be used as an example of how the application of a pragmatic problem-solving approach in the actual development and implementation of HPT could provide knowledge of how to achieve a good fit between the needed inquiries of the target group and the functions and features of the technology.

7.2. DISCUSSION OF THEORETICAL APPROACH

Applying an OS perspective to obtain the purpose of this thesis has formed a somewhat individualized understanding of occupations as performed in everyday life, in sequence and in interplay with other occupations (C. Christiansen, 2005; C. Christiansen & Townsend, 2010; C. H. Christiansen, 1999; Erlandsson, Rognvaldsson, & Eklund, 2004). Opposite to this individual perspective on occupation, the employment of Deweyan pragmatism allowed me to describe actions of everyday life as situated and "transformative." As a combination of OS and Deweyan pragmatism, a transactional perspective on occupation was employed (Cutchin & Dickie, 2012; V. Dickie et al., 2006). In line with methodological issues on assuring credibility and authenticity to findings produced in qualitative research (Denzin & Lincoln, 2000; Whittemore, Chase, & Mandle, 2001), it is relevant to discuss my ambition to "double manage" theoretical perspectives from OS and Deweyan pragmatism. The application of OS as a theoretical frame provided this thesis with the overall viewpoint that engagement in occupation is a core foundation for health and that the management of everyday health emerges and unfolds through

humans' engagement with and participation in occupation. Applying OS also provided a theoretical frame for classifying and explaining everyday life occupations into a foreseeable lot. In relation to this, however, it is worth discussing whether, by the application of OS, I approached the underprivileged citizen's range of everyday occupations from a rather upper-based classification of occupation.

For example, OS proved useful in dividing everyday life into separate and definable occupations in the development of the Everyday Circle in Study II. Yet it is possible that this approach may indirectly have created a unilateral focus on the citizen's performance of occupation. Following this line of reasoning, it can be argued that this thesis is influenced by the two opposing discourses and, thus, by two discrepant ways of understanding occupation as a phenomenon: a) the pragmatic belief that the key to human occupation is to be found in the agentic nature of humans and that knowledge fundamental to occupation is tentative, has been dependent on and has been created in particular contexts and b) a structuralist way of reasoning that views human occupation as based on all-embracing frameworks, with an understanding of knowledge as objective, context-free and generalizable to multiple contexts. This discrepancy is further believed to be the root to practitioners' daily struggle between meeting, describing and treating clients on a holistic level and a simultaneous demand to match clinical and quantifiable approaches to this conviction of human occupation (Hocking, 2008; Hooper & Wood, 2002; Taff, Bakhshi, & Babulal, 2014). It is thus possible that the separation of occupations into manageable entities may have been done from the perspective that humans create the overall framework of life through structures of occupational performance, placing emphasis on static, generic and linear explanations of occupation rather than on a dynamic and contextually dependent conceptual framework (Hooper & Wood, 2002). However, this is in contrast to the findings in Study III.

Although this thesis has indicated that combining an OS perspective and Deweyan pragmatism offers a valuable frame for conceptualizing underprivileged citizens' engagement in health-related occupation, the theoretical approach chosen for this thesis does not come without problems. Considering that researchers have questioned whether Dewey's pragmatic line of thought is perhaps too philosophical in regard to its problem-solving perspective, it is worth discussing whether applying Dewey's philosophy as a theoretical frame for this thesis may have caused implications for the results of the thesis. Because a transactional perspective on occupation is described as developed on the basis of Dewey's theory of transaction (V. Dickie et al., 2006), this discussion will also indirectly imply this perspective.

Dewey's description of situations as continuous creates the problem that his theory on transaction and inquiry ends up being rather "formless" (R. M. Aldrich, 2008; Barber, 2006; Lee Bunting, 2016; Miettinen, 2006). Dewey did not fully describe any bounds of the concept of situations, which consequently raises the question of the criteria for defining the limits of "a situation." Although Dewey described a situation as formed by an organism-environment interactive unity (Dewey, 1938), it is possible that applying his pragmatist perspective in Study II may have kept my

analysis of underprivileged citizens' use of technology on a somewhat unshaped level. Likewise, my suggestion of the engagement of occupation as an explorative and practical action of inquiry put forth in Study III can be argued as rather frameless.

Dewey's view on human action within ever changeable situations can be argued to be predominantly centered on thinking (inquiry) and on the result of thinking as the truth (the solving of problems). Thus, applying to this thesis Dewey's idea of knowledge as the key source of human practice also raises the question of whether focusing on underprivileged citizens' ability to engage in health-related occupation is merely a "knowledge issue." Although Dewey argued that thinking must bleed into experience (Dewey, 1958) (which is exemplified in the citizens' need of inquiry to action strategies), it can be argued that applying Dewey's theoretical stance in this thesis may have resulted in a lack of focus on how strategies for action are acted out by underprivileged citizens within specific contexts in real life. Considering that Study II revealed that the participants needed somewhat fixed frames in their everyday management of health, it can moreover be problematized that my suggestions on planning HP programs and the development of HPTs targeted to underprivileged citizens, from the viewpoint of supporting their strategies on inquiry to action, is partly founded on a theoretical perspective that appears unframed.

Reflecting on the above described implications of using Dewey's philosophical perspectives on human action as a theoretical frame for this thesis leads to further reflections on other theoretical approaches that could have been of relevance. In regard to the possible "lack of frame" derived from the application of Dewey's theory on transaction and inquiry, it would be relevant to turn the focus toward activity theory as an alternative theoretical approach, due to the theory's description of situations as located within historical and sociocultural contexts. From an activity theory perspective, any situation is therefore to be understood as a part of the development of society, including its contradictions (Luria & Vygotsky, 1992). The foundation of activity theory was laid out by Vygotsky as a "cultural-historical" school of psychology. His work was continued by Leontjev and Luria, while Engeström further developed this work into a "second-generation" version, moving the focus from the individual to collective activity systems within a community with identified rules and divisions of labor. Overall, activity theory can be described as a philosophical cross-disciplinary framework for studying human practices as development processes, from the perspective that individual and social levels are interlinked at any time (Engeström, Miettinen, & Punamäki, 1999). Applying activity theory as a theoretical frame would consequently imply focusing on the individual with a simultaneous acceptance of the importance of a sociocultural matrix within which individuals develop (Engeström et al., 1999). From this perspective, it is likely that applying activity theory as a theoretical frame for analyzing underprivileged citizens' use of technology for everyday health management would have provided indications on historically as well as socioculturally influenced perspectives. This would presumably have provided an overall reference frame for an explanation with more "form" than Dewey's notion of

situation. Due to its focusing on the individual, an activity theory-based reasoning would doubtlessly allow a perception of challenges and needs in the lives of underprivileged citizens. In relation to this, it is worth noticing that researchers within social and health psychology have emphasized the potential of applying activity theory as a frame for theorizing inequality in health (Collins, McCrory, Mackenzie, & McCartney, 2015).

Although activity theory could have been a potential theoretical frame for this thesis, it can be questioned whether applying activity theory would fully meet the need for situated approaches within research on HP, HPT and OS. Carrison (2001), for instance, problematizes the idea that activity theory is based on the dualistic perception of human practice as created on the basis of “internalization,” and he quotes Vygotsky (1980) on his belief that “an operation that initially represents an external activity is reconstructed and begins to occur internally” (p. 276). From this, Carrison further questions whether activity theory fully explains how the outer and inner interact and what mediates this interaction from a situated perspective. I believe the same is true in relation to the objective of this thesis. Due to activity theory’s favoring of activity (occupation) as occurring on the basis of human consciousness, it can be argued that an activity theory approach would have provided this thesis with a dualistic view on external and internal causes of engagement in health-related occupation—that the environment becomes a durationally extensionally occurring convergence of human occupation. This interactional view would likely be very useful for simplifying a methodological approach when examining underprivileged citizens’ use of technology for everyday health management and could reduce the complexity of conceptualizing inequality in both health and in engagement in health-related occupation. Opposite to this, Dewey’s description of a situation, his theory on transaction and inquiry, and a transactional perspective on occupation can be argued as seeking to avoid dualism between the external and the internal, and by that, to encapsulate the whole complexity, creating inequality in both health and engagement in health-related occupation at the same time.

Overall, there are no doubt both similarities and contradictions between the theoretical approach of this thesis and activity theory. However, outlining similarities and contradictions, for instance, between Dewey’s theory on transaction and inquiry and an activity theory approach would involve extensive work that would require an in-depth knowledge of both theoretical directions.

7.3. DISCUSSION OF METHODOLOGY

In the following sections, I will discuss possible challenges derived from the applied methods in the three studies comprising this thesis. Further, reflections on other possible methodological approaches will be discussed.

7.3.1. REVIEW METHODOLOGY

Several reasons led to the choice to apply a systematic approach to reviewing the literature in Studies I and II in particular. The first lies in the methodological considerations on ensuring reliability in both the selection and analysis of relevant literature. For example, the transparency of the reviews conducted in Studies I and II was maintained by carefully describing how the search was carried out and developed and how the literature finally included was organized. The second reason is that reviewing relevant literature is pointed out as an essential feature of academic work, creating a solid foundation for ongoing knowledge (Webster & Watson, 2002). Following the structural processes suggested by Garrard (2014) provided the opportunity to spot differences and similarities between parts of the included literature, which proved to be of great relevance for my contribution. The third reason is that the matrix analysis of literature has been used in a variety of disciplines to sum up aspects of relevant knowledge and as a point of departure for providing comprehensive understanding of particular phenomena and problems (Lubbe, Kloppe, & Rugbeer, 2007; Whittemore & Knafl, 2005). Applying the matrix method (Garrard, 2014) provided structural arrangement to the considerable amount of literature included in the studies presented in this thesis. This structured approach proved to be an effective tool for integrating, evaluating and analyzing the content of the enrolled literature, and as such, for covering the complete scope of the aim of this thesis. Finally, the matrix method was chosen due to its designated relevance to health research (Garrard, 2014; Goldman & Schmalz, 2004) and because of its proven relevance for OS and OT research (Perruzza & Kinsella, 2010; Petersen, Hounsgaard, & Nielsen, 2008).

However, I did consider using alternative review methods in the planning of Studies I and II in particular. For example, I could have conducted a narrative literature review. By applying this approach, my review of literature in Studies I and II would have focused more on criticizing and summarizing the literature identified. The identification of literature would also have been more selective, while the in-depth examination of the place and year of publication, for instance, would have been left out (Cronin et al., 2008; Green, Johnson, & Adams, 2006). It is thus conceivable that the application of a narrative literature review in Studies I and II would not have provided the same possibility for examining a relatively large amount of literature as was examined in Study I.

In relation to this, it is relevant to highlight the fact that the literature review conducted in Study III can be described as rather traditional. Although I applied a matrix structure as a basis for the analysis of literature in Study III, the focus within the review of relevant background literature was instead on obtaining a comprehensive background for understanding and thus problematizing the current production of knowledge. The use of a more traditional review methodology was also applied to highlight the significance of new research. The identification of literature enrolled as background material for Study III was based on citation search. A possible criticism about this approach may be that relevant literature within OS

has not been included in the study, whereas the application of a structured search method would most likely have identified more relevant literature. Applying a more structured approach in Study III would have created the possibility of focusing more on which target groups in conjunction with which methodological approaches in research within OS have applied a transactional perspective on occupation (Cronin et al., 2008). This could probably have provided further nuances to my argumentation regarding the claim that a more process-oriented understanding of the relationship of occupation and situation is needed.

7.3.2. CHALLENGES IN COLLECTING EMPIRICAL DATA

Recruiting and retaining participants in Study II was essential to generate rich, quality empirical data (Flick, 2009; Maxwell, 2008). In view of the fact that all enrolled participants met the inclusion criteria, were able to fulfil the probes and participated in interviews and that five citizens were able to participate in the workshop, the participants overall were appropriate candidates for generating rich data. The variety among the demographics of participants, such as gender, age and health challenges, further supported this, although more women than men were included in the study.

However, recruiting and retaining participants did prove to be a challenge, since only 7 out of the 15 citizens initially contacted agreed to participate. This raises considerations of matters in relation to the validity of the thesis. First, the fact that all initially contacted citizens suffered from health challenges may have influenced the dropout rate of seven citizens. I am aware of at least four citizens who were so troubled either by somatic or by psychological disease that they wished not to participate in Study II. After further consideration, the duration of the process of gathering empirical data in Study II may have resulted in a lack of participation motivation for some of the citizens. As such, it is possible that information on the time period for the overall process of gathering data (four months) may have influenced some citizens' decisions on whether or not to participate (Denzin & Lincoln, 2000; Maxwell, 2008; Noy, 2008). In relation to this, it is worth taking into account whether the designation of two community workers to assist in the recruitment of citizens was appropriate or whether I myself should have handled the first contact with the citizens. Although the community workers were thoroughly informed about the study as a means of reliability (Noy, 2008), it can be questioned whether snowball sampling served as an appropriate method for recruiting citizens for Study II. In light of the challenges with which the citizens were struggling, it can therefore be considered whether other recruitment strategies would have been more appropriate as a means of building better credibility among the participants and for me as a researcher.

I could have performed a "face-to-face" recruitment of participants (Maxwell, 2008), for instance, by participating in local events or by placing myself at significant spots in the area, identified through my participation in neighborhood walks. From there, I could have attempted to make contact with potential

participants. However, in the context of recommendations to avoid the stigmatization of underprivileged citizens by unintended communication (Sundhedsstyrelsen, 2009) as well as the fact that the findings from Study II indicated that the participants appreciated contact with health professionals, the involvement of community workers familiar to the participants appears to be a suitable approach to the recruitment of citizens in relation to the study's overall validity. However, it should be considered whether my knowledge of the citizens living in the chosen residential area was sufficient. Participating in neighborhood walks (Kanstrup et al., 2014) proved to be essential for providing knowledge about the residential area. Yet it could be considered whether further steps should have been taken in advance to build credibility among the 15 participants who initially contacted me as a researcher and thus to create a possible basis for more participants to complete the study.

In the use of a participatory approach to collect empirical data in Study II, the ambition was to include participants as fully as possible in both the collection and the analysis of the data, with respect for the privacy of participants. A key issue was further to establish a process of gathering data where priority was given to enlightening the experiences of the participants and the characteristics of their everyday lives as crucial to ensure a better fit between the design of technology and the way it is going to be adopted by the user (Simonsen & Robertson, 2012). The reasoning behind the choice of a participatory approach is also to be found in other researchers' use of participatory design in relation to the development of technologies aimed at underprivileged citizens (Kanstrup & Bertelsen, 2016; Siek et al., 2009). As a means of providing validity, the participatory approach was intended to ensure authenticity by facilitating an adequate portrayal of the meaning and experiences lived and perceived by the participants, as transferred for analysis (Whittemore et al., 2001).

By applying Muller's idea of a third space to Study II, the intention was to establish an environment for the best possible unfolding of the chosen participatory approach. This was done through an attempt to bridge two important spaces in the process of gathering empirical data, that is, my own world as a researcher and the (everyday) world of the participants, into a space that allowed hybrid experiences, questioning, challenges and reinterpretation of data (Muller, 2003). For that reason, the process of gathering empirical data was characterized by working in iterations. Feedback from the participants obtained in each step of the process of gathering data was analyzed and woven into my methodological considerations and decisions as an important part of the process. As such, the data and information obtained through collaboration with the participants were constantly reviewed and evaluated throughout the process. Through doing so, this thesis methodologically responds to the call for giving a voice to the voices unheard through engaging underprivileged citizens in the design process of HPT (Bull, 2010; Moen & Brennan, 2005; A. Parker et al., 2012; Showell & Turner, 2013b; Siek et al., 2009; Turner et al., 2013). During the collection of empirical data, however, it became apparent that

establishing a third space in cooperation with underprivileged citizens did not come without methodological challenges.

The rationale for the choice of giving the citizens missions and, for instance, asking them to take photos of their uses of technology in everyday life is to be found in the possibility of methodologically allowing the citizens to document their use of technology as they experienced it. Through the methodological choice of letting the citizens themselves control the selection of images, they became authors of their own, explaining how to use technology to engage with health. Likewise, the citizens' drawing of the optimal "machine" by which they could engage with health was intended to strengthen their engagement in the process of gathering data and to enhance the possibility of sharing thoughts and ideas on how HPT should be developed to fit the citizens' everyday lives (Mattelmäki, 2006; Muller, 2003).

However, when analyzing the fulfilled probes as a means of providing structure to the data prior to conducting follow-up interviews (see section 5.4.2), it became clear that some of the participants had difficulties in performing the missions. This resulted in some of the tasks not being completed properly yet completed enough to be included in the overall analysis process. For example, some of the participants expressed difficulty in understanding the instructions that were given for the three missions, while others skipped parts of the assignments, such as writing in the notebook what was on the photos taken of their use of technology in everyday life. In particular, the mission of "Draw and describe the optimal 'machine' to engage with health" turned out to be challenging for some participants. In one case, a participant let her daughter draw the "dream machine," claiming that she did not possess enough imagination or drawing ability to fulfil the assignment. Reflecting on this, it can be debated whether my intention of enabling participants to visualize nonverbally and to encourage thinking in nonstandard ways as a way of providing broad possibilities for expression was "out of context" (Bagnoli, 2009).

The follow-up interviews applied in Study II served to increase the credibility of the findings in the study by seeking authenticity through the participants' verbal expressions of meaning and experiences concerning their use of technology to engage with health in everyday life (Maxwell, 2008; Whittemore et al., 2001). Although the follow-up interview proved useful in the process of gathering data, it may be open for discussion whether the method may contain drawbacks that have influenced the results of this thesis. First, the answers given by the participants during the interviews conducted in Study II can to some degree be argued as shaped by the questions asked by me. Thus, it is possible that the participants may have left out discussion about their use of technology that could have provided relevant perspectives. Second, choosing individual follow-up interviews proved to be time-consuming with regard to both data collection and analysis, which may have limited the possibility of further empirical perspectives in relation to underprivileged citizens' use of technology (Alshenqeeti, 2014).

Because of these possible disadvantages of using individual follow-up interviews, the use of a focus group interview was considered during the planning of collecting empirical data. A focus group interview would have produced data based on social processes, and the group dynamics in the interview situation would likely have supported the participants in their reflections in a different way than with ordinary individual interviews. In relation to this, it is conceivable that the participants, due to the similarity of their life situations, would have had an understanding of each other's situations with which they could perhaps better support each other in reflections than I could as an interviewer. The dialectic relationship among the participants could possibly also create new understandings among the informants. Likewise, it can be argued that a focus group interview would perhaps better reflect norms in technology use for underprivileged citizens. However, a focus group interview could have limited the participants in talking sufficiently about their use of technology for everyday health management. Finally, a decisive element in the choice of individual interviews instead of a focus group interview was the fact that the participants may not have wanted to share all details with others on their use of technology for everyday health management (Kvale & Brinkmann, 2014; Maxwell, 2008; Rabiee, 2004).

By integrating the use of the Everyday Circle in the follow-up interview (see section 5.2.5), the intention was to enhance the participants' reflexivity and elucidate their use of technologies in everyday life. My development of the Everyday Circle from theories in OS and research on studies of time use in everyday life (C. Christiansen, 2005; Pentland et al., 1999) was thus done for the purpose of fitting the context of the interview and facilitating the participants' sensitivity to the use of technology in everyday life. Further, as a somewhat visual task, the Everyday Circle was intended to overcome any silence that might occur during the interview and provide structure to the participants' narratives. Together with the mission of "drawing a machine," the Everyday Circle was developed from the viewpoint that not all knowledge is reducible to language. As such, the possibility of drawing and visualizing was embedded in planning the design of the probes from the perspective of giving the participants other expressive possibilities and of facilitating activities that allowed the participants to reflect on how they used technologies to engage with health (Bagnoli, 2009). With respect to validity, the Everyday Circle served as a means of giving readers the possibility of following my interpretive effort through the "visual recording" and presentation of the participants' experiences (Maxwell, 2008; Whittemore et al., 2001).

My creation of the Everyday Circle was primarily based on considerations regarding how to activate the participants in the best possible way and facilitate conversation on their use of technology in everyday life during the follow-up interview. I did not pilot test the use of the Everyday Circle before applying it to the follow-up interviews. This may therefore cast its validity into question and thus be considered a methodological weakness of Study II. However, Whittemore et al. (2001) have argued that the creative use of novel methods may serve to provide validity as long as they are grounded within a scientific process. Yet it is conceivable that I could

have used already existing and thoroughly tested templates and tools for interview instead. During preparation for collecting data in Study II, however, I did not identify specific interview tools developed for obtaining knowledge on people's use of technology in everyday life. For example, studies within OS have developed observation-based assessment tools focusing on people's ability to manage technology in everyday life. Yet these tools were developed to assess the management of technology use in everyday lives among older adults in general and especially for people with mild Alzheimer's disease. These tools were therefore not found to be useable (Malinowsky et al., 2011).

As another example, I considered using Occupational Questionnaire as a template for obtaining an overview, during the follow-up interview, of the activities during a typical day in which the participants used technology. Occupational Questionnaire is a time diary that would have given me the possibility of asking the participants what they did on a typical day, in half-hour blocks from morning to midnight (Scanlan & Bundy, 2011; N. R. Smith, Kielhofner, & Watts, 1986). Modifying the questionnaire would further have given me the possibility of investigating the subjective qualities of the activities in which the participants used technology—that is, whether or not the activities were related to health management. However, it can be debated whether applying Occupational Questionnaire would have created too much focus on the time aspects of technology use. Nor is Occupational Questionnaire available in Danish, which could have caused comprehension problems for the participants.

By using a workshop in the process of collecting empirical data, the ambition was to create a hybrid for the citizens and for me as a researcher to communicate and share knowledge about both the process of collecting data and the learning and insights gained on our own and from each other's contexts (Muller, 2003). The use of a workshop and, in particular, the presentation of my analysis additionally served to achieve open reflexivity and inquiry as well as a critical analysis of interpretations (Maxwell, 2008; Whittemore et al., 2001). However, it can be debated whether or not the local health center was an optimal setting for conducting the workshop. As described by Muller (2003), workshops within research using a PD approach have often taken place in a location not "native" to the participants of the workshops, in order to create the same participation opportunities for all participants. Yet all citizens participating in this workshop were familiar with the local health center due to its role as a central meeting place in the residential area. It is conceivable that this may have had an impact on the outcome of the workshop. However, the choice of the local health center as a setting for the workshop can be justified by taking into account the fact that studies concerning health-promotion activities for underprivileged citizens have recommended making participation practical and geographically easy (Diderichsen et al., 2011; Michie et al., 2009; Sundhedsstyrelsen, 2009).

Overall, the fact that the enrolled participants suffered from chronic diseases proved to be of significance to the process of gathering data. It can also be concluded that not all participants were comfortable with the "openness" embedded in the

application of cultural probes intended to facilitate imaginary thoughts, for instance. A more standardized procedure would perhaps have been more appropriate. In conclusion, one might say that the study revealed some cultural problems with the cultural probes developed, from the perspective that even though the method of probes did make sense as a method to lead participants to consider their use of technology in everyday life (Mattelmäki, 2006), this may not have appeared as significant to the participants on a subjective level (Bagnoli, 2009). As such, a methodological finding of this thesis may be that open formats for gathering data may not always favor participation in relation to underprivileged citizens, since some can feel uncomfortable with these formats. This viewpoint correlates with the advice to customize health-promotion activities to the targeted citizens' needs and opportunities (Diderichsen et al., 2011; Sundhedsstyrelsen, 2009).

7.3.3. STRIVING FOR QUALITY IN DATA ANALYSIS

The trustworthiness of the analysis performed in Study I was enhanced by the following of guidelines set by Garrard (2014). In Study II, the trustworthiness was strengthened by following the analytical reflections and procedures described by Mattelmäki (2006) and Elo and Kyngäs (2008). Study III followed principles for analyzing set out by Hsieh and Shannon (2005). In addition, the trustworthiness in applying the QSR NVivo software (QSR International Pty Ltd., 2014) to save, read, organize and analyze the data material in Study II was strengthened by following guidelines and reflections put forward by Bringer et al. (2004) and White and Marsh (2006). Features of the program allowed for keeping track of all steps in the analysis of the empirical data and thus brought consistency to the analysis process. In particular, the program served to replicate the analysis from one step of analysis to the next. Elements of the program include marking up data, dividing data into blocks for analysis, and writing notes, which are central in the phases of preparation, organizing and reporting in both inductive and deductive qualitative content analysis.

All analytic activities were carried out in collaboration with the co-authors and supervisors of the three studies presented. I performed the analysis, while my co-authors and supervisors verified these, focusing on quality and new insights. Discussions were also held continuously until agreement on the understandings and analytical findings was reached on all aspects concerning methodology, coding, final categories and themes, together with the discussion of the findings. The focus throughout these discussions was to ensure credibility, consistency and quality in the analytical processes that took place in the three studies (Elo & Kyngäs, 2008; Garrard, 2014; Whittemore et al., 2001). Overall, the quality of the procedures for analyzing both the literature and the empirical data was established through verifying conclusions, reflexivity and presentations at meetings with experienced researchers in qualitative research methods, with supervisors and with other PhD students.

In Study II, the effort to provide trustworthiness to the analysis of empirical data was supplied with respondent validation. As such, the presentation of my initial analysis for the participants at the workshop as well as the participants' work with fictional characters (see section 5.2.6) served as a "member check" intended to provide me with feedback on data and analysis from the participants (Maxwell, 2008). The choice to seek respondent validation can further be argued as being a matter of providing integrity to the analytic procedures conducted in Study II. As such, following the principles of a PD approach, my ambition was to strengthen the trustworthiness of the data analysis in Study II through my humble presentation of preliminary findings and a check of my interpretations from the very citizens I studied, as a means of averting uncritical verificationism (Whittemore et al., 2001).

CHAPTER 8. CONCLUSION

The overall aim of this thesis was to develop conceptual knowledge on underprivileged citizens' engagement in health-related occupation. Attention was on how technology is used for everyday health management by underprivileged citizens experiencing health challenges and living in residential areas identified as districts with health inequalities. Three studies were conducted for the purpose of achieving the overall research aim from a) a state-of-the-art literature review, b) an empirical study and c) the development of a theoretical framework.

RQ 1: How can health inequalities, high-risk areas of health and engagement in health be described and analyzed from an occupational science perspective?

From an OS perspective, inequality in health can be described as occurring when individuals' and groups of citizens' possibility of choosing and participating in occupation are differentially and unequally shaped and when the conditions required to enact occupation are limited and obscured. High-risk areas of health can be described as areas negatively influencing or restricting the possibility of individuals or groups choosing and participating in occupation. Engagement in health can be described as groups' or individuals' decisions to perform and participate in occupations that in different ways influence their health.

There is an assumed relation in OS and OT literature between occupation and inequality in health, characterized by the lack of occupation created by unequal and limited possibilities for choosing and participating in occupation; it is also assumed that different existing or nonexisting factors within society, environment and the person promote limited and obscured conditions for enacting occupation. From a transactional perspective on occupation, a lack of occupation and existing or nonexisting factors can be viewed as emerging from the transaction of the person, the environment and a complex, fluctuating and uncertain situation. From this perspective, inequality in health can be analyzed as a situation experienced by individuals or groups of people due to unequal and limited possibilities for choosing and participating in occupation.

RQ 2: How do adults with health and life challenges use technology in everyday health management?

The citizens used technologies in various types of activity during their everyday lives. Activities such as cleaning, eating and drinking, spending time with family and engaging in social activities were those in which the citizens used technology the most in their everyday lives. The citizens did not use technology in school, educational activity or paid work. The types of technologies used the most by the citizens varied from kitchen appliances, cleaning machines and technologies related to personal hygiene to televisions, computers and phones. In terms of using

technology to engage in health, citizens pointed to taking care of friends, engaging in social activities and doing voluntary work as activities in which the use of technology meant the most for their engagement in health. Consumer technologies such as televisions, computers, tablets and smartphones were the types of technologies used the most by the citizens to engage with health, with a marked focus on features and functions related to the Internet, such as official webpages, social media, chat and email.

In relation to everyday health management, the citizens used technology a) to launch inquiries relevant to breaking inappropriate health-related habits and moving from inspiration to actualization; b) to connect to the contexts of their everyday lives; c) to obtain an overview of social- and health care-related communication and information; d) to communicate with other adults on health-related matters and e) to support their inquiries for uniformity and stability, as a foundation for coping with everyday life and, thereby, managing health. However, the underprivileged adults experienced the technology that they used as a) nonsupportive in fulfilling their desire to move toward new habits and b) supportive to a limited extent in connecting to the context and obtaining an overview of communication and information relevant to their management of everyday health.

From a transactional perspective, the study contributes with the finding that underprivileged citizens need support in inquiries into appropriate habits and actualization through guiding and pushing, targeted personal information and person-centered and simplified communication. The study further revealed that underprivileged adults need support in knowledge strategies for everyday health management and need guidance on how to convert these strategies into everyday health management. On this basis, supporting underprivileged adults' health-related inquiry by developing "inquiry to action"-focused applications supporting in-depth practical concerns on everyday health management was identified as an important emphasis in the design of HPT.

Overall, the citizens' use of technology in everyday health management can be described as dependent on whether or not the technology takes account of and supports the merging of the necessary and complex interplay of personal and contextual conditions as well as supporting the citizens in their "inquiry to action" strategies concerning in-depth practical concerns on everyday health management.

RQ 3: How can John Dewey's logic of inquiry contribute to examination of the situatedness of occupation from the perspective of how situation and occupation are related?

John Dewey's logic of inquiry can contribute to an understanding of how situation and occupation are related through the theoretical perspective that inherent in occupation is an inquiring process that provides occupation with a transformative capacity and that humans, by engaging in occupation, situate themselves into ever changeable situations through the explorative and practical acting of inquiry. "Acted

situated inquiry” can be described as what happens within situations when people gain knowledge through engagement in occupation. However, this acted situated inquiry depends on a context rich enough to provide cues for knowledge strategies on how to engage in the next experimental and transformational doing in everyday life.

From the answers to the three research questions, I contribute by conceptualizing underprivileged citizens’ engagement in health-related occupation as a situationally dependent transactional experience, characterized by a practical acting of inquiry on health-related matters. Derived from this conceptualization, underprivileged citizens’ problems in engaging in health-related occupations can be viewed as difficulties with acting inquiringly on health-related indeterminacy in their everyday lives. On the basis of the perception of engagement in health-related occupation, underprivileged citizens’ use of technology for everyday health management can be described as dependent on whether or not the technology takes account of and supports the merging of the necessary and complex interplay of personal and contextual conditions as well as supporting the citizens in their “inquiry to action” strategies concerning in-depth practical concerns on everyday health management.

CHAPTER 9. LIMITATIONS AND FUTURE WORK

There are limitations and implications for future research to consider when interpreting the results of the thesis and reflecting on the applied theoretical approach and methodology.

A significant limitation of this thesis is the low number of participants enrolled in Study II. Thus, the conceptualization of underprivileged citizens' engagement in health and their use of technology for everyday health management put forth in this thesis can be argued as created with rather low empirical credibility. In view of this, there is thus no doubt that future empirical work pursuing and developing this conceptualization on a larger empirical basis is needed to raise its trustworthiness. In relation to this, the challenges experienced with recruiting and retaining participants in Study II point to a need to thoroughly consider how to include underprivileged citizens in future studies. Of particular importance is the exploration of recruitment and retaining strategies in relation to underprivileged citizens during research processes.

Applying a participatory approach proved to be a useful way of giving unheard voices a voice in this thesis (Showell & Turner, 2013b; Turner et al., 2013). However, the experienced "cultural problems with cultural probes" in Study II may have limited the empirical results of this thesis. Inspired by this, it seems important in future research to involve and collaborate with these "voices" not only during the process of gathering and analyzing data but perhaps even in the earlier stages of developing probes for gathering the data. It is thus considered that if the citizens are integrated into the development of the means of collecting data, this would provide the techniques applied with characteristics matching the participants' preferred modalities of expression and would thus serve to diminish validity threats (Maxwell, 2008; Whittemore et al., 2001). Finally, the application of participatory approaches and cultural probes as methodological approaches would be an interesting area of exploration in future research within OS.

It may be argued that the areas of Dewey's pragmatic attitude addressed in this thesis only comprise a subset of his extensive lifelong work. As such, the application of Dewey's theories on transaction and inquiry is limited by their dispersal over Dewey's entire body of work, and this application cannot be codified in a single source or, for that matter, in a single thesis. Acquiring a thorough understanding of Dewey's pragmatic attitude means a dedicated study of his ideas. As such, future work could include in-depth studies of Dewey's pragmatist perspective in relation to the theme of this thesis. Relevant examples could include future work applying the perspective of both common-sense and scientific inquiry and focusing on the influence of contextual cues in relation to underprivileged citizens' use of

technology and engagement in health-related occupation. In such work, however, it is worth considering whether Dewey's practical epistemology can provide more than hypotheses on humans' ways of living their everyday lives but can also provide practically oriented guidelines, sensible within a world that has changed significantly in many ways since Dewey developed his theoretical assumptions.

Although this thesis has shown that Deweyan pragmatism offers a set of concepts applicable in achieving the objective of the thesis, limitations to the application of Dewey's theoretical stance can be identified. Considering the influence that Dewey's notion of "a situation" has had on the three studies comprising this thesis, his missing criteria for defining the boundaries of a situation can be considered as limiting the conceptualization of underprivileged citizens' engagement in health-related occupation suggested in this thesis, due to a lack of concreteness. Future work exploring underprivileged citizens' engagement in health-related occupation in a historical as well as a sociocultural frame would thus complement the results of this thesis by putting more form on inequality in health as a lived experience. It can also be argued that applying Dewey's theoretical stance on inquiry in this thesis may have left out a "real-life action" focus. This fosters the perspective that if the conceptualization of underprivileged citizens' engagement in health-related occupation suggested in this thesis were to be more fully developed in future empirical work, a more "structural" and "acting out" theoretical perspective could have been of relevance. Overall, this thesis may be limited by the lack of a systematic and practically applicable perspective.

Overall, this thesis has suggested a possible understanding of inequality in health from an OS perspective. Limitations can be identified and future work is needed focusing on the complexity of inequality in health and how this relates to human occupation, and vice versa. First, the terminology on inequality in health and related areas applied in this thesis may be limited by my first initial literature search conducted in Study I. The growing political focus and broad amount of research on inequality in health has led to a wide range of concepts related to the problem of inequality in health. Thus, from the application of additional and different terminology, future research may contribute with other perspectives on the relationship of inequality in health and occupation. Second, it is conceivable that future work within OS may provide other theoretical and empirical perspectives both supplementing and questioning the perspectives put forth in this thesis. From the findings in Study I in particular, however, it can be suggested that the focal point of future work within OS should be the in-depth exploration of the assumed relationship between occupation and inequality in health regarding environmental, social, cultural, historical and personal aspects.

As the assumption underpinning OS and OT is that engagement in occupation is essential to maintaining health (Hocking, 2013; Wilcock, 2006), and the overall purpose of OS is to study humans as occupational beings through the individual performance of occupation and interaction with the environment (F. Clark & Lawlor, 2009; Yerxa, 1990), then it can be asserted that exploration of how the use

of digital technologies in everyday life for people of all kinds is needed within OS and OT. This thesis may contribute as an example of such research and may serve as a basis for future research within OS and OT focusing on new digital technologies as aids to engagement in occupation. The perspectives on the relationship of occupation and digital technologies put forth in this thesis, however, can be argued as mainly theoretical. Empirical studies exploring the influence of digital technologies on people's engagement in health-related occupation from a situated perspective would thus be one interesting area of research in future work within OS.

In relation to this, an important question raised from the results of this thesis is what possible considerations for the future study of underprivileged citizens' use of technology might be derived from the conceptualizations suggested in the thesis. The scope and scale of this thesis would not justify claiming that my conceptualization should be central when, for instance, planning HP programs integrating HPT-targeted underprivileged citizens. Yet it is interesting to contemplate whether this conceptualization captures a potentially beneficial way of guiding future interventions within HP and designs of HPT. Considering that the results of this thesis are limited by the missing exploration of underprivileged citizens' use of concrete HPT in their management of everyday health, it would be important to critically explore whether the suggested occupational perspective can support tailored designs of HPTs for underprivileged citizens and at the same time guard against facilitating a larger gap between underprivileged and privileged users of the technology.

Overall, future research may confirm, refute or add nuance to the development of the conceptualization presented in this thesis on both a theoretical and, perhaps even more importantly, on an empirical level. Testing whether the line of reasoning presented in this thesis holds true, through action-based research applying participatory approaches, would be an important asset in the further development of knowledge on underprivileged citizens' use of technology for everyday health management. It would also be important to explore whether the theoretical and empirical findings presented in this thesis would be transferable to other groups of citizens or perhaps to citizens in general through future critical studies.

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APPENDICES

Appendix A. Identified literature matrix – study I	156
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Appendix A. Identified literature matrix – study I

Distribution of head terms, specific keywords or words in close relation to these															Publication and code															
Inequality in health (24.3%)															Primary Source Material (PSM) (24.3%)															
															Secondary Source Material (SSM) (73%)															
															Tertiary Source Material (TSM) (2.7%)															
															Article (A) (73%)															
															Textbook (TB) (24.3%)															
															Official document (OD) (2.7%)															
															Health inequities (21.6%)															
Health disparity (8.1%)																														
Health disparities (24.3%)																														
Social inequality in health (13.5%)																														
Social determinants of health (18.9%)																														
Socioeconomic Status (35.1%)																														
Health literacy (18.9%)																														
Social gradient (2.7%)																														
High-risk areas of health (0%)																														
Underprivileged residential areas (0 %)																														
Low-income communities (18.9%)																														
Vulnerable citizens (5.4%)																														
Underserved citizens (0%)																														
Marginalized groups (40.5%)																														
Engagement (81%)																														
Motivation (18.8%)																														
Involvement (18.9%)																														
Commitment (2.7%)																														
Empowerment (24.3%)																														
Occupational Science (100%)																														
Occupational therapy (100%)																														

\dot{O} [illegible]

X	X	X	X						X				X	X	X			X	X	X	Braveman & Bass-Haugen (2009) (SSM) (A) (United States)
														X	X				X	X	Hammell (2008) (SSM) (A) (Canada)
														X	X						Reid (2008) (SSM) (A) (Canada)
														X	X	X				X	Reid (2008) (SSM) (A) (Canada)
														X			X			X	Abrahams (2008) (SSM) (A) (South Africa)
															X					X	Petican & Bryant (2007) (SSM) (A) (United Kingdom)
														X	X					X	Håkansson et al. (2006) (PSM) (A) (Sweden)
														X	X					X	Wilcock (2006) (SSM) (TB) (Australia)
X						X	X								X				X	X	Reid (2005) (SSM) (A) (Canada)
															X	X				X	Bass-Haugen et al. (2004) (SSM) (TB) United States)
			X												X					X	Townsend & Wilcock (2004) (SSM) (A) (Canada)
X														X	X				X	X	

Appendix B. Identified empirical research on HPT for underprivileged citizens

Authors, year and country	Purpose	Participants/ material	Findings	Methods/ Design
King et al. (2013). USA.	To evaluate the effects of a community center-based ECA virtual advisor, culturally and linguistically tailored for a low-income, bilingual, inactive older adult population, on physical activity adoption.	Forty participants. Fifty-five years of age and older + inactive.	A virtual advisor delivering physical activity advice led to a meaningful four-month increase in walking and a change in strategies to promote physical activity behavior change among underserved older adults.	Randomized controlled design. Participants were randomized into a four-month virtual advisor walking intervention or waitlist control.
Atkinson et al. (2007). USA.	To examine the perceptions of low-income rural mothers regarding their need for nutrition and physical activity education and the role of technology in addressing those needs.	Two hundred and two women aged 18 or older receiving food stamps, with children in nursery school to eighth grade.	Participants were aware of and practiced health behaviors related to nutrition and physical activity but faced barriers related to income level, place of residence and having children. Eighty-six percent used the Internet for medical information, 66% used health-related websites, 29% used the Internet somewhat to benefit their health and 49% used it a lot.	Household telephone survey (N=146) and focus groups (N=56).
Siek et al. (2009). USA.	To determine suitable interventions for an at-risk low socioeconomic population.	Nine female caregivers aged 24 to 51 + 13 children aged 4 to 10 from low-income families.	Participants wished for assistive reminder-based systems to help them be healthier by encouraging them to take care of themselves, providing reminders and logging functionality for exercise and nutrition data.	Two participation-based design workshops.
Parker et al. (2012). USA.	How technology can reduce health inequalities by disrupting power relationships and helping communities pursue social change.	Thirty-four females + 7 males aged 18–67, living in a predominantly African American neighborhood with a median income 34% below the state average.	A community-anchored digital tool can facilitate health activism and help shift users' attitudes regarding their role as advocates for health behavior change.	Twelve-week field study in three phases.

Gorman et al. (2008). USA.	Review of the evidence on the barriers to and drivers of the use of interactive consumer health information technology (IT) by specific populations, namely, the elderly, those with chronic conditions or disabilities and the underserved.	Studies of all designs describing the direct use of interactive consumer health IT from 1990 to 2008.	Few of the studies were specifically designed to compare the underserved with the general population. Several types of interactive consumer health IT were usable and effective in multiple settings with all of the populations of interest.	Structured search in MEDLINE, CINAHL, PsycINFO®, the Cochrane Controlled Trials Register and Database of Systematic Reviews, ERIC, American Association of Retired Persons (AARP) and AgeLine.
Khan & Siek (2011). USA.	To explore low socioeconomic status populations' health routines to identify opportunities for sociotechnological interventions that would improve their health habits.	Four primary caregivers (mothers) and four secondary caregivers (eldest daughters).	Technological intervention should be adapted to multicultural issues and designed to induce a gradual positive change in low socioeconomic status families' health and highlight examples of good health to educate the community.	A four-week multimedia-elicitation interview study where participants used mobile phones to capture videos and pictures of their everyday health routines.

Appendix C. Overview of the analytical findings in study II

Component	Indeterminate situation	Characteristics	Challenge	Need	Determinate situation	Artefact	Feature/function	Transactional perspective
Habit	Stalling Having a bad day	A lack of know-ledge about how to break the situation	Breaking inappropriate habits	Stimulation into action Social contact	Appropriate habits	Computer, Tablet Smartphone	Chat Email	Support of inquiries towards appropriate habits and actualisation
	Confusion Slowed desire to move on	Difficulties in translating inspiration into action	Moving from inspiration to actualisation	Guiding and pushing Targeted personal information	Actualisation	Computer Tablet Smartphone	Internet Official web-pages Social media	
	Disconnected to a context	Lack of possibility to experience and define them-selves as part of a context	Connecting to the context	Being someone within a context To gain access to and coordinate with and within a certain context Motivation and recognition by other citizens	Connected to the context	Television Computer Tablet Smartphone	Internet Email Social media Chat	
Context	A missing overview of communication and information	Difficulties in manoeuvring within communication and information systems	Obtain an overview of communication and information	Person-centered and simplified communication	Overview of communication and information	Computer Tablet Smartphone	Internet Email Text message	Support of context-related inquiry and experience

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End-in-view	Lack of knowledge about how to cope with the situation	Difficulties in managing everyday life	Coping with everyday life	Maintaining the status quo Obtaining situation-convertible knowledge To compare with others in the same situation	To cope with everyday life	Computer Tablet Smartphone	Internet Social media	Support of inquiries aiming at uniformity and stability
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Appendix D. Identified contributions within occupational science to the theorizing of occupation as situated

Author(s) Year of publication	Aim	Category: Occupation as a situational construction, only understandable by the application of a transactional perspective.	Category: Transaction as depending on individuals' "doing" of occupation.	Category: Apply mapping and sketching to depict findings relating to the situatedness of occupation
Dickie et al., 2006	To provide basis for a proposal for thinking about occupation as transactional.	x	x	
Cutchin, 2007	To bring several perspectives—philosophical, social theoretical, and geographical—to bear on the problem of habit and its significance and to provoke thought and provide a synthesis that advances current thought on habit and on rehabilitation.	x		x
Aldrich, 2008	To examine the utility of general complexity theory for developing understandings of occupational engagement and their collective contributions in light of present and future potentials for scholarship on occupation.	x		x
Dickie, 2010	To demonstrate the need for, and potential of, research approaches that allow for expansion and contraction of focus, movement between or together, traveling back and forth in time.	x		x
Kuo, 2011	To examine the relation between occupation and experience and explore the potentiality of occupation as means to create experiences that matter.	x	x	

Brorsson et al., 2011	To illuminate experiences of accessibility in public space in people with Alzheimer's disease.	x	x	
Milbourn, McNamara, & Buchanan, 2014).	To review the relevance of the concept 'everyday' when applied to contemporary occupational therapy and the lives of individuals who experience biographical disruption.	x		x
Aldrich & Laliberte Rudman, 2015	To initiate a discussion about the utility of situational analysis for critical, socially-responsive, and community-engaged occupational science research and to stimulate further discussion about situational analysis and other analytic approaches, methods, and methodologies that can advance knowledge about occupations and situations.	x	x	x
Proding et al., 2015	To outline key tenets of institutional ethnography to argue its relevance for studying human occupation.	x	x	

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